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ORIGINAL COMMUNICATIONS.

THE TREATMENT OF ECLAMPSIA IN THE PATIENT'S HOME.[1]

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No discussion of the treatment of disease can be rational or complete which does not consider the pathology of the affection.

In the light of our present knowledge, eclampsia results from a complex toxemia whose materials are formed in the liver, cellular tissue, and kidneys of the mother, in the fetus, and in the placenta. The blood of the mother is burdened with poisons whose circulation through the nervous system produces convulsions. The removal of the fetus and its appendages from the body of the mother favors cessation of the convulsions in many patients; in other cases it has no influence whatever upon the course of the disease. Should the child survive its birth it may perish from the same toxemia which produced the maternal convulsions.

When the mother recovers from eclampsia she does so by virtue of profuse elimination. In favorable cases convulsions are brought to a close by profuse elimination, which relaxes the spasm of the blood-vessels and restores the healthful condition of the blood. This may or may not be accompanied by the expulsion of the fetus. When patients die from eclampsia they die from exhaustion of the nerve centers, with high temperature and paralysis of the vasomotor, cardiac, and respiratory centers.

The treatment of eclampsia in private houses must be conducted under considerable limitations. Methods of treatment by operation which require thorough antiseptic technique are rarely possible. Very frequently methods of treatment requiring especially skilful nursing cannot be carried out. In many cases the physician must limit himself to those things which he can do personally, or which can be entrusted to untrained persons of average intelligence. It is obvious that, when possible, cases of eclampsia should be sent to hospitals. Their management is so complex and difficult that frequently the resources of a good hospital are considerably taxed in their care.

When a physician is summoned to a case of eclampsia in a private house his first duty is to rescue the patient from the danger of injuring herself through biting the tongue and lips or falling from the bed upon the floor. This may be done by placing a folded towel between the teeth and by instructing some one how to keep the patient upon the bed. To mitigate the severity of the convulsions a small quantity of chloroform may be used.

A thorough examination of the patient should next be made, and although the case may seem terrifying and demanding instant treatment, yet plenty of time should be taken to thoroughly examine the case. The condition of the pupils, the pulse tension, the presence or absence of fetal heart sounds, the character and frequency of uterine contractions, and the condition of the lungs of the mother, should all be ascertained. The presence or absence of a large quantity of gas in the intestine should also be observed, and vaginal examination

[1]Read before the Southern Branch of the County Medical Society, Oct. 25, 1907.

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should then be made; for this it is well to give the patient a small quantity of chloroform, so that vaginal manipulation may not excite convulsions. Vaginal examination should determine the degree of dilatation and effacement of the cervix, the softness of the cervix, the condition of the membranes, the presentation and position, and the proportionate size of the presenting part and the pelvis. In other words, the vaginal examination should ascertain the feasibility and propriety of delivering the patient at once. If the cervix is found effaced or greatly shortened, the tissues soft and yielding, the dilatation two-thirds complete, the presenting part well engaged, the uterus acting in its endeavor to expel the child, the patient should be delivered as soon as possible. If, however, the cervix is but very little shortened, not much softened, the os not dilated, the presenting part not engaged, the patient having little or no uterine contraction, no efforts should be made to empty the uterus.

Should delivery be indicated, it is usually possible to complete dilatation of the cervix with the hand, under chloroform, apply the forceps, and deliver the patient. The placenta should be removed promptly, and the uterus thoroughly irrigated with salt solution and packed with sterile, or ten-per-cent iodoform, gauze. Extensive lacerations of the cervix and pelvic floor, if the patient is in fair condition, should be immediately closed.

If the conditions are not favorable for immediate delivery, the patient should be treated by the most prompt and vigorous elimination. If the pupils are small, the pulse tension very high, the pulse beat heavy, strong, and slow, the color of the face dusky, the patient more or less comatose, with stertorous breathing, the most prompt and efficient treatment consists in taking from the arm from four to eight ounces of blood, followed immediately by intravenous saline transfusion. The quantity of fluid introduced into the circulation should be governed by the condition of the heart. If the heart be vigorous, its muscular sound good and its beat strong, from one to two pints of fluid may be given. If the heart action is feeble, the heart sounds poor, and the general condition of the patient that of relaxation, not more than one pint should be used. It must be remembered that a large quantity of fluid introduced suddenly into the circulation, where the heart muscle is weak, may assist in causing acute and even fatal dilatation.

The large intestine of the patient should next be very thoroughly flushed with hot salt solution. It is well to secure free egress for the fluid, at first washing away such fecal matter as will come, and then allowing one or two quarts to remain for absorption. The patient should preferably be placed upon the left side with the hips raised, the largest available rectal tube be inserted as high as possible, and from one to two gallons of fluid should be employed.

Copious lavage of the stomach with hot salt solution is exceedingly valuable, but is sometimes not available in private houses. It may be impossible to procure the simple apparatus needed for this treatment. When it can be done, however, the stomach should be washed until the fluid runs practically clear, and following this from five to ten grains of calomel and bicarbonate of soda should be placed in the stomach through the stomach-tube.

While the pack is of very considerable value in most cases, it must be given properly and with caution to avoid injury to the patient. If carelessly given the patient may become chilled or burned. The physician should not attempt it unless he has fairly competent assistance. If the wet pack cannot be given it will be of decided advantage to the patient if she be wrapped in a blanket, each leg being wrapped separately to permit treatment addressed to the intestines and vaginal examinations, hot-water bottles being placed about the legs and feet, and cloths wrung out of ice water should be placed upon the forehead.

When the pack can be given a rubber sheet or mackintosh should be placed upon the bed, and over this a large blanket wrung out of hot water. On this the patient is placed without clothing, wrapped in the hot blanket, and other hot blankets wrung out of hot water placed upon her,

the legs being separately wrapped. Over all is put a rubber sheet. Cold is applied to the head and face. The patient may safely remain in a hot pack from thirty to sixty minutes. When she ceases to sweat she should be thoroughly and gently rubbed with hot dry flannel and wrapped in dry blankets.

Distention of the bladder is very common in eclampsia and is of considerable importance. Such a patient should be catheterized every four to six hours and for several days after her recovery from convulsions. The urine should be examined and its quantity and character noted.

In spite of the treatment already described the patient's pulse tension may remain high; in such a case veratrum viride should be given hypodermically in 10 mm. doses hourly, not exceeding three doses. The effect of this drug is to relax pulse tension, to favor dilatation of the cervix and dilatation of the venous portion of the circulation. In moderate doses it is especially valuable.

The treatment thus outlined, if thoroughly done, will occupy several hours, and during this period convulsions may be controlled by the inhalation of chloroform, using as little as possible; care should be taken to keep the patient's mouth and throat quite free from mucus to prevent inspiration pneumonia; if possible the room should be well ventilated. At the end of several hours, if the patient is to deliver herself, the cervix will be dilated to some degree and the presenting part will have descended. In choosing the time for delivery, it is especially important that the physician delay until the cervix has been effaced and the tissues about the external os fully softened. If the patient is growing more quiet, the pulse tension less, if she is sweating freely and the cervix is softening and dilating, the physician should not interfere. Intestinal lavage may be repeated without much disturbance to the patient and with great advantage. If a hot pack has been used it may be repeated in two or three hours. If the patient has vomited freely, the gastric lavage may be repeated, and if there is evidence that the patient has ejected the calomel a smaller dose may then be given.

The determination to interfere and end the labor should be made upon the following grounds: The cervix thoroughly softened, partly dilated, the presenting part well engaged and descending, and uterine contractions developing decidedly. This last is the crucial test, because uterine contractions excite eclamptic convulsions, and when labor has become active it must be terminated as soon as possible. In terminating labor the uterus must be thoroughly emptied at once, the placenta being removed and the uterus douched with sterile salt solution and packed with ten-per-cent iodoform gauze. If the patient is in fair condition lacerations in the cervix, pelvic floor, and vagina should be immediately closed. Remembering the tendency to profuse hemorrhage, the uterus should be thoroughly packed, the vagina as well.

If the indications for delivery are not present, the eliminative treatment already described should be kept up until labor declares itself. If the patient's strength shows signs of lessening she may be given by rectum an ounce of whisky and four ounces of salt solution every three or four hours. Digitalin may be given hypodermically to sustain the heart; strychnine and atropine, if pulmonary edema and heart failure are threatened.

After delivery the physician must remember that the patient is by no means safe from eclampsia. After the patient has reacted from labor there is no objection to giving morphine or codeine in sufficient doses to procure refreshing sleep. So soon as the patient can swallow she should be given peptonized milk diluted with barley water, and if the rectum will retain them, rectal injections of whisky and salt solution should be given. Strychnine may be given hypodermically as needed. Ergot should be omitted because of the enfeebled condition of the heart. The patient should be kept between warm blankets in a well-ventilated room, and absolutely quiet. Catheterization must not be forgotten, as after delivery in eclampsia the bladder often be-

comes extremely distended. The inhalation of oxygen during eclampsia and after delivery is of decided value when it can be continuously and skilfully administered.

We must remember that eclampsia, like most diseases, is self-limited. We have seen a woman have most violent eclampsia and recover without coming into labor and without losing the life of her child. She was spontaneously delivered some time after her recovery from eclampsia. Nature usually tries to save the mother at the expense of the child, by shutting off the placental circulation by thrombosis, and thus removing from the mother the toxins which come to her from the fetus. In attempting to save the mother's life that of the fetus should be disregarded, although in operating the fetus should be given all possible protection.

We desire to add a word of caution to practitioners concerning the giving of a prognosis in cases of eclampsia. So deadly is the disease and so great the anxiety of relatives, that if the patient grows better, and especially if she is delivered, the physician is strongly tempted to express decided hopes for the future. No patient is safe until at least ten days have elapsed after eclampsia; gangrenous pneumonia, thrombosis and cerebral embolism, cardiac syncope through exhaustion of the heart muscle, acute nephritis, liver abscess, and cerebral edema have ended the lives of patients who apparently had escaped eclampsia. Severe hemorrhage from the genital tract may also occur at any time during the first ten days after the uterus is emptied. On the other hand, so desperate are some of the cases which recover that the physician should not give an unfavorable prognosis. He should, however, decline absolutely to commit himself, but should state that the patient has a very serious disease and urge the relatives of the patient to assist him in his treatment in every possible way.

Should the child survive, the physician must remember that it also is toxemic. The child should not nurse the mother for several days at least, but should be given water very freely, and the intestinal tract should be very thoroughly irrigated twice in twenty-four hours. The child should be fed dilute cow's milk, predigested, and should be kept as warm as the temperature of the weather and the child's condition demand. Prognosis as regards its life should be absolutely declined, for many of these children die within a few days after birth from some manifestation of toxemia.

THE GUAIACOL TREATMENT OF PNEUMONIA.

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Two years ago I reported in the THERAPEUTIC GAZETTE sixteen cases of croupous pneumonia treated with guaiacol with no mortality.

This communication is supplementary to that report. The number of cases treated has increased since that time to about fifty, besides a number seen in consultation, and with the same results. My cases have not been selected. Every case that I have seen, of whatever age or condition, has been treated by this method.

Believing that fifty consecutive cases of pneumonia without a death may be of interest, I will again bring my treatment of this disease to the attention of the profession. I will give an outline of my former paper, making such changes and additions as added experience has suggested.

The remedy is rubbed into the skin. Any part of the body may be selected. The abdomen absorbs the medicine more readily than the chest, and this site is selected unless there is pain in the chest, when the seat of pain is chosen, as usually its use relieves the pain. No two applications are made in the same place. The skin is first thoroughly cleansed with soap and water, or with ether. The dose is from 5 to 30 minims, but the average dose is 20 minims for adults and 10 minims for a child one year of age. Children require a larger proportionate dose than adults.

The drug is dropped slowly from a medi-

cine dropper (the usual size holds about 20 minims) and rubbed in with the end of one finger, as much will be absorbed by the finger if care is not taken. It is usually all absorbed in one or two minutes.

This agent acts very promptly. In about an hour the patient perspires freely, and the temperature, pulse, respiration, and color of skin commence to improve. Within six hours the temperature drops from two to four degrees, and the general symptoms are much improved. I never repeat the treatment in less than twelve hours. In some mild cases the treatment is not repeated, the temperature not rising again much above normal. The average number of treatments is between three and four. Many cases receive two applications—an initial dose of 20 minims, followed in twenty-four hours by 10 minims. In fact, some of the worst cases require but two applications. I will mention two interesting cases that occurred this fall.

One case seen in consultation with Dr. M. was a child ten years of age. The disease had reached its second stage. The temperature was 104°, and the patient was very sick. Fifteen minims was used, and twelve hours later the temperature was 101° and the patient much improved. At the end of twenty-four hours after the first dose the temperature rose to 102°. Ten minims of guaiacol was used, and twelve hours later the temperature became normal and remained so.

October 14, 1907, I was called to see Mr. P., aged seventy-five. I found the patient very ill in the second stage of pneumonia. The right lower lobe was involved, the respiration labored, the eyes suffused and dull, and the skin of a dusky color. He was delirious, picking at the bedclothes and begging to be taken home. His heart was irregular and none too strong. He had suffered from valvular insufficiency for many years. His temperature was only 102.5°, but his general condition was exceedingly bad.

I used fifteen minims of guaiacol, and saw him again at 6 P.M., or nine hours later. The temperature was now 98°, and all the symptoms had improved. On the next day at 9 A.M. the temperature was 97°, and the other symptoms about the same as at the last visit. At 5 P.M. the temperature was 101° and the delirium had increased. I used eight minims of guaiacol, and on the 16th the morning temperature was 97.5° and the symptoms had all improved. The temperature did not again rise above normal. He was up, dressed, and about the room in seven or eight days from my first visit.

This treatment appears to arrest the disease in some cases, and in all to shorten its course and render it less severe. In the greater part of the cases physical signs have not developed very much after treatment was commenced. Dulness usually does not increase, but soon diminishes, and the sputum if red is apt to lose its color in a day or two.

This agent moderates the action of the heart, but, in proper dosage, not unduly so. However, an agent of such potency is not to be trifled with. I never trust it in unskilled hands, but usually apply it myself.

Very little other medication has seemed necessary in these cases. Tonics, stimulants, and expectorants have been seldom employed. I have kept the bowels well open, fed the patient lightly, and insisted upon frequent sponge baths and plenty of fresh air.

The direct influence of this agent upon the thermic centers would explain the prompt fall in temperature, but to maintain a lower temperature and a general improvement in all the symptoms it must in some way affect the morbific element that maintains the disease.

How is this accomplished? Does it neutralize toxin? Does it destroy the pneumococcus or so impair its vitality as to render it an easy prey to the phagocyte or incapable of producing toxin in as large quantity or of as virulent quality? Or does it stimulate the white blood-corpuscles to renewed activity?

I first administered guaiacol by this method in cases of tuberculosis, and found that it seemed to produce the full effect of

creosote without the disadvantages of the usual methods of administering that drug. This experience led me to inquire if this agent might not be of benefit in pneumonia, a disease that has seemed to baffle all our resources.

In my tubercular cases I have always combined guaiacol with the open-air treatment, and while I have had good results I have not known how much effect to attribute to the guaiacol, but in my pneumonia cases the results have been excellent.

FIFTEEN CASES OF ANTHRAX TREATED IN THE PHILADELPHIA MUNICIPAL HOSPITAL, WITH ABSTRACTS OF HISTORIES, LABORATORY NOTES, AND AUTOPSY NOTES, AND COMMENTS ON TREATMENT, INCLUDING ANTIANTHRAX SERUM.[1]

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AND

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Within two and one-half years fifteen cases of cutaneous anthrax have come under our care in the Municipal Hospital. During this interval a number of cases have been seen by physicians in private practice in Philadelphia, and the Division of Vital Statistics records a number of deaths from this disease. It is not at all surprising that so many cases should develop in a city with such extensive manufacturing industries. In her tanneries, leather establishments, and manufactories of hair products and woolens is her greatest danger.

The fifteen cases coming under our personal observation have all been victims of their peculiar vocations. Six worked regularly in hair; five were steadily handling hides; two, cases 4 and 10, hauled hides incidentally; one worked in leather; and one skinned a cow dead of what was supposed to be anthrax. The diagnosis was confirmed bacteriologically after coming under observation in all except cases 3 and 12. In each of these the anthrax bacillus was found in the Pennsylvania Hospital before admission. In six patients the pustule was on some part of the face, in five on the neck, in two on the forearm, and in one on the finger. Fourteen were males, one was a female.

While studying these histories two cases of internal anthrax occurring in Philadelphia were investigated by the hospital staff. Both cases were hide-workers, and Dr. Daniel Longaker, the physician, had made a provisional diagnosis of internal anthrax before signing the death certificate in each. In the first case some slight edema was noted on the chest without visible signs of pustule, and blood aspirated from the heart by one of us (Dr. Holmes) showed anthrax bacilli in smear preparation and in culture. In the other case the diagnosis was made chiefly on the history of the blood-spitting and sudden death, without sign of tuberculosis or pneumonia. This case was investigated by our associate, Dr. M. F. Percival, who easily demonstrated anthrax bacilli in aspirated heart's blood, while a culture studied later showed typical anthrax organisms. Both men were hide-workers.[2]

It is of some interest to note that of the three fatal cases, two, numbers 2 and 4, had anthracemia when blood cultures were made soon after admission, and the third, number 10, had a positive blood culture eighteen hours after admission; that case 2 showed anthrax bacilli in the feces before death; and that case 4 had these organisms in his sputum. It is interesting to note that at autopsy, and later in histological study

[1] Read by Dr. Royer before the Pennsylvania State Medical Society in Reading, Pa., Sept. 26, 1907, and accompanied by a lantern demonstration.

[2] Report of these two cases to be published elsewhere, by Drs. Longaker and Holmes.

of the tissues, anthrax bacilli were demonstrable in nearly every organ of each cadaver.

From a pathologic standpoint it is of interest to note that each fatal case had marked edema of the superficial tissues and of the lungs; that a high-grade fatty liver was found in each; that acute nephritis (hemorrhagic in case 4) was constant; that the spleen was very friable and showed in each a high-grade coagulation necrosis; that fatty heart was present in the three cases; and that marked pulmonary infarction was met with in case 3.

The blood was studied for change in leucocytosis in 13 cases, the highest count being 25,000 per cubic millimeter, in case 2, a fatal case, and the next highest 20,600 per cubic millimeter, in a case with marked edema (see photograph of case 5). Two fatal cases, numbers 4 and 10, showed no marked increase in leucocytes. The average leucocyte count in 13 cases was 13,900 per cubic millimeter.

Eleven differential leucocyte counts were made, with the average of 77.6 per cent poly. L., 17.7 per cent L. L., 5.3 per cent S. L., 3 per cent E., .01 per cent B., and .04 per cent M. The increase noted was almost entirely in the polymorphonuclear cells. The highest count in this type of cell ran 88.8 per cent in case 2 and 80 per cent in case 11, a female with a rather mild infection. Blood cultures were made in nine cases, with a report of anthrax bacilli in the three fatal cases and a negative report in the six cases recovering. In the two cases after death, study requested by Dr. Longaker, anthrax bacilli were found in smear preparations from heart's blood and in culture.

The treatment practiced in these cases was excision, free drainage of edematous area, and phenol injection in No. 1; excision, drainage of edematous area with removal of axillary lymph nodes, and antiseptics in No. 4; excision and cauterization with powdered bichloride of mercury in No. 7; excision and cauterization with powdered bichloride of mercury and injection of antianthrax serum in Nos. 5, 6, 8, 13, 14, and 15; with serum and late excision and cauterization in No. 10, and Sclavo's serum only in Nos. 2, 9, 11, and 12; while No. 3 appears to have cured himself. Three

TABLE SHOWING OCCUPATION, DAY OF DISEASE, LOCATION OF LESION, TREATMENT, AND RESULTS.

No.	Year.	Name.	Occupation.	Location of lesion.	Day of disease.	Treatment.	Results.	Remarks.
1	1905	O. J.[1]	Farmer.	Forearm (left).	8th.	Surgical and phenol injection.	Cured.	Skinned cow dead of anthrax two days previously.
2	"	J. V.[2]	Hide-sorter.	Right neck.	3d.	Serum only.	Died.	Anthrax bacillus in blood cultures.
3	1906	A. F.[3]	Hide-scraper.	Right ring finger.	14th.	Local antiseptic.	Cured.	
4	"	E. G.[4]	Teamster.	Right forearm.	3d.	Surgical and antiseptic.	Died.	Hauled hides three days before.
5	"	S. S.	Morocco-worker	Neck (left).	5th.	Serum and surgical.	Cured.	
6	"	L. H.	Hair-sorter.	Left neck.	3d.	Serum and surgical.	"	
7	"	T. C.	Hide-sorter.	Lower lip (right).	5th.	Surgical.	"	
8	1907	A. S.	Hide-stacker.	Forehead (right).	12th.	Serum and surgical.	"	Delirium tremens after operation.
9	"	J. S.	Hide-stacker.	Face (left side).	21st.	Serum only.	"	
10	"	H. P.[5]	Stevedore.	Neck (left).	4th.	Serum and late surgical.	Died.	Unloaded cargo of hides three days previously.
11	"	Mrs. S.	Hair-sorter.	Neck (right)	4th.	Serum only.	Cured.	
12	"	S. C.[6]	Hair-washer.	Right cheek.	4th.	Serum only.	"	
13	"	M. M.	Hair-comber.	Right cheek.	5th.	Serum and surgical.	"	
14	"	S. S.	Clerk and hair dealer.	Chin (left side).	3d.	Serum and surgical.	"	Handled bales of hair.
15	"	P. S.	Hair-spinner.	Right cheek.	2d.	Serum and surgical.	"	

[1] Operation by Dr. Schwartz before admission to Municipal Hospital.

[2] Serum probably not absorbed; edema too great.

[3] Not confirmed bacteriologically by us; organisms found in Pennsylvania Hospital.

[4] Died next day of uremia, probably due in part to anesthetic: a chronic alcoholic.

[5] Lesion was not removed for 24 hours after admission; death half an hour after operation, sudden, after retching; one-half grain cocaine used.

[6] Organisms found in Pennsylvania Hospital before admission.

cases died, one (No. 2) having serum only, and much of it probably not absorbed; one (No. 10) had serum, and as a last resort excision and cauterization; and one had excision with antiseptic gauze drainage, and died of uremia in eighteen hours.

Only general conclusions regarding the treatment of anthrax may be drawn from

Case 1.—Photograph eighth day of disease by Dr. E. N. Fought. Note point in upper arm where edema ends abruptly.

these cases, and these chiefly from our judgment of individual cases.

Serum treatment alone in certain cases seems to be curative. Serum combined with excision and cauterization with bichloride of mercury would seem to give best results in severe cases, while excision and cauterization alone will undoubtedly cure many.[1]

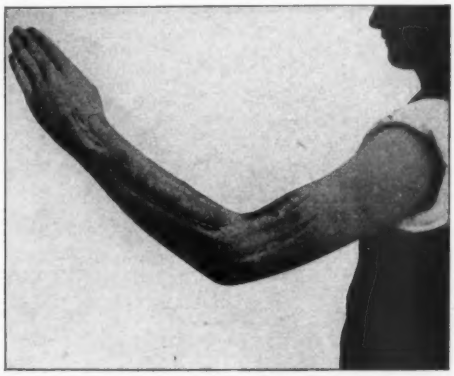
The serum was prepared in Professor Sclavo's laboratory in the University of Sienna, and may be used with the same degree of safety as may other sera. The dose depends upon the animal from which the serum has been secured and his susceptibility to anthrax. It is not yet standardized, hence the manufacturer's advice is followed with each lot of serum. From 10 Cc. to 40 Cc. may be given at a single dose—10 if given intravenously, 40 if given under the skin.

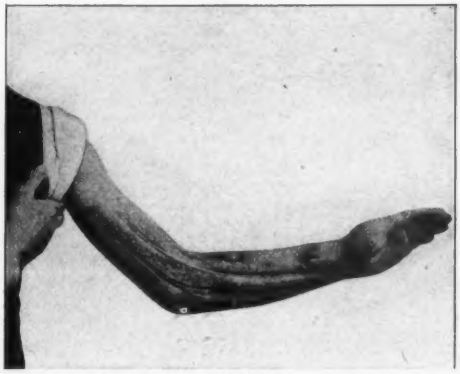
The serum is made as follows: An ass, or goat, or sheep, preferably an ass, is vaccinated with an attenuated anthrax culture; in ten or twelve days with a more virulent culture; and so on with cultures of increasing virulence until enormous doses of the most virulent anthrax bacilli are safely borne. After several months of this treatment the animal is bled, and the protective power of its blood serum is determined by the injection of rabbits with definite quantities of anthrax culture of known virulence and certain quantities of this serum. The serum is marketed only when capable of showing a high degree of protection toward virulent anthrax bacilli. The serum is not offered for sale by American serum manufacturers.

Special attention is called to the short incubation period found in three cases. In case 1 the papule was seen two days after skinning a cow; case 4 hauled a single load of hides three days before sickening with anthrax; and case 10 unloaded a cargo of hides three days before the pustule developed. Other possible sources of infection were unsuccessfully sought in each case.

Abstracts of each case history follow:

Case 1.—C. J., male, aged 24, farmer. Admitted Jefferson Hospital, February 22, 1905, with two anthrax pustules on left





Case 1.—Photographs showing condition when well and exhibited before Academy of Surgery.

[1] A full review of surgical, medical, and serum treatment given by Schwartz and Royer. Transactions Philadelphia Academy of Surgery. 1905.

forearm. Lesions developed two days after skinning a cow dead of anthrax (?). Onset small, itching, burning papule; third day, bleb formation with areola about papule and beginning edema of forearm. Sixth day, constitutional symptoms, fever, severe headache, pain in entire arm, with great edema of extremity. Eighth day, surgical treatment; recovery.

Treatment: Deep excision of pustules, injection of phenol about site of pustule and about upper arm beyond limit of edema, free incision along entire arm and hand, moist bichloride of mercury dressing.

Smear preparation and culture studied in Jefferson Hospital showed anthrax bacilli; operation performed there by Dr. Schwartz. Blood count made in Municipal Hospital after operation showed 19,400 leucocytes, 3,240,000 erythrocytes. Differential count: Poly. L. 87.68 per cent, L. L. 7.66 per cent, S. L. 2.66 per cent, E. 2 per cent. Slight mercurial disturbance during convalescence. Recovery with slight limitation of motion of elbow joint. (See accompanying photographs.)

Note.—Period of incubation, two days. Case previously reported by Schwartz and Royer, Transactions Philadelphia Academy of Surgery, 1905.

Case 2.—J. V., male, aged 57, hide-sorter, admitted December 10, 1905, third day ill with anthrax. Lesion on right neck beginning as a painful papule. Second day, severe headache, severe vomiting, marked

CASE 2.—Photograph taken third day of disease to show small lesion at angle of jaw.

CASE 2.—Photograph taken fourth day to show increasing edema.

fever, with edema beginning. Third day, previous symptoms continued, with edema extending over entire right neck and upper part of chest; some prostration; fever 103.4°.

Smear preparation, cultures from pustule, blood culture, and animal experiments all showed anthrax bacilli, and later studies of feces showed this organism. A leucocyte count on admission showed 25,000 cells per centimeter. Differential count: Poly. L. 88.8 per cent, L. L. 9.3 per cent, S. L. 1.6 per cent, E. 0 per cent.

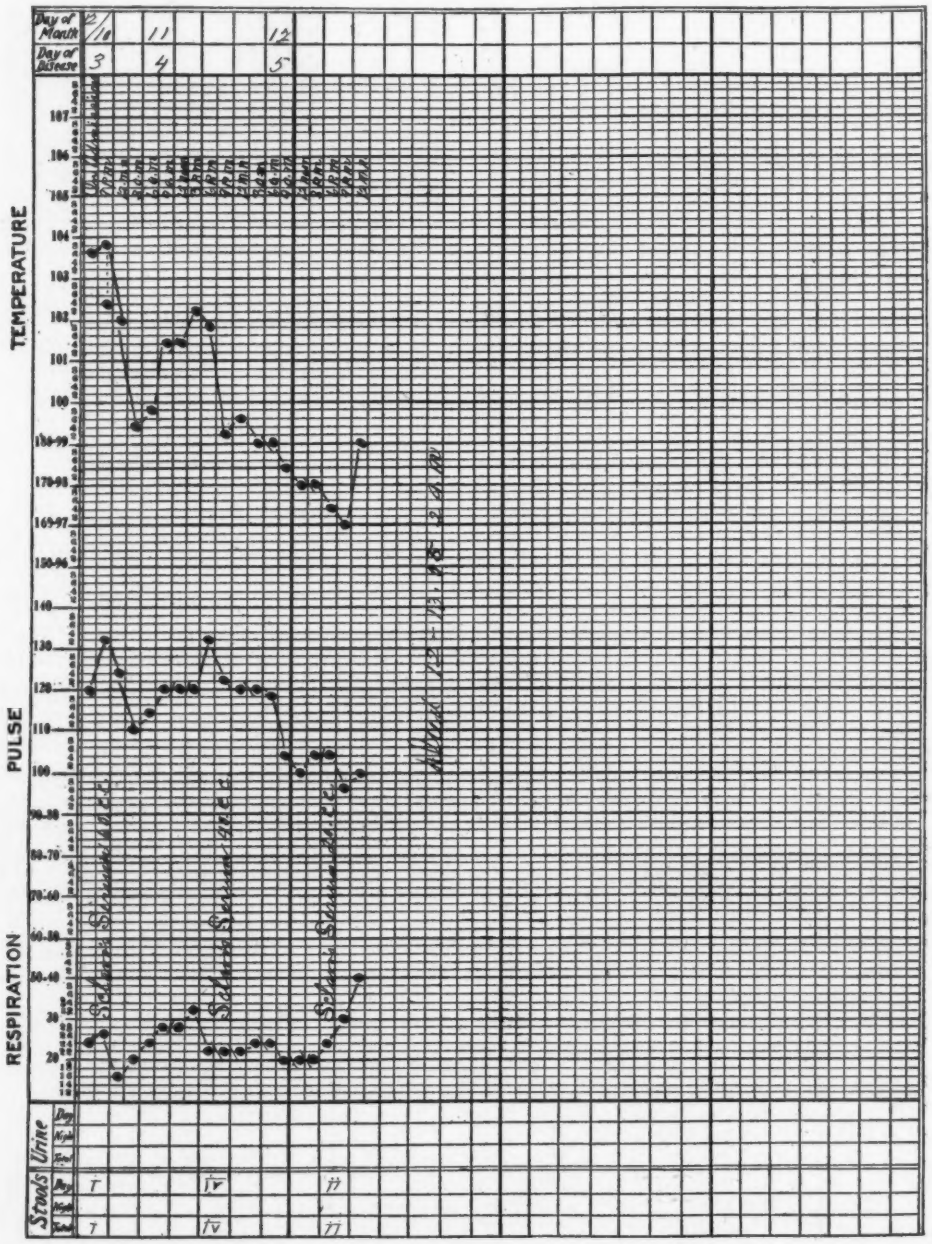
Treatment: Sclavo's antianthrax serum subcutaneously in abdominal wall—60 Cc. third day, 60 Cc. fourth day, 20 Cc. (entire supply) fifth day. Death sixth day; conscious until near death.

Autopsy showed fatty degeneration of heart, acute parenchymatous nephritis, acute splenitis, pulmonary infarction, and general edema of subcutaneous tissues. Anthrax bacilli recovered at autopsy from stomach, spleen, heart, and both lungs. Histologic study by Dr. Geo. B. Foster showed same organism in liver, lungs, spleen, kidney, and heart, and confirmed the gross findings.

Note.—Patient ex-army officer (Austria), liberal user of spirits; stigmata of syphilis present. Edema of belly so great that serum was not well absorbed. (This was probably the first use of Sclavo's serum in America. Serum supplied by Prof. A. Sclavo to Philadelphia Board of Health on

request of Dr. A. C. Abbott, Chief of the Bureau.)

Case 3.—A. B., male, aged twenty-six, hide-scraper, admitted March 13, 1906, fourteenth day of anthrax. Lesion began as a papule on ring finger of right hand; a vesicle formed on second day, with areola and swelling of finger. Patient denies constitutional symptoms and never actually quit work. Hand never much swollen. Anthrax bacilli found in Pennsylvania Hospital. On admission, a hard brown eschar nearly



CASE 2.—Chart showing great drop in temperature following injection of antianthrax serum. Edema continued extending until patient died.

three-fourths of an inch in diameter on dorsal surface of right finger, third phalanx, a reddened areola surrounding this eschar, and entire finger considerably swollen.

Treatment: Eschar removed, moist bichloride dressing applied; no internal medication.

Note.—This diagnosis was not bacteriologically confirmed by us. Probably a case of spontaneous cure.

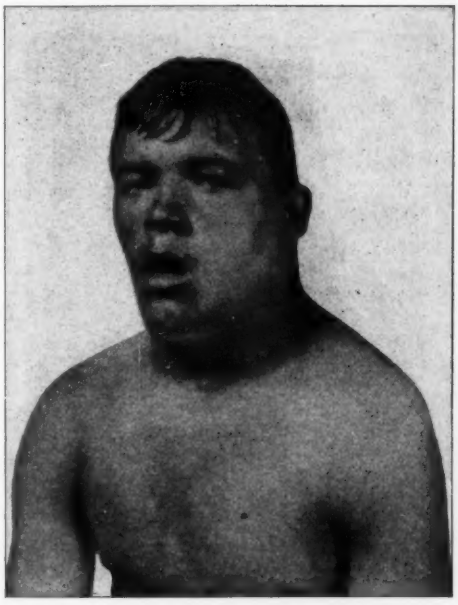
Case 4.—E. G., male, aged forty, teamster, admitted April 20, 1906, third day ill with malignant pustule on right forearm, external surface. Onset small, painful "pimple," increasing in size by second day, with distinct areola and edema. By third day the pustule was one-half inch in diameter, with blebs irregularly grouped about lesion, and great edema of entire arm and side of chest. Specific organism found in Episcopal Hospital, and confirmed here in smear preparation and by culture. Patient a powerful man, a heavy drinker, with kidney and heart lesion and history of syphilis. Blood count on admission: Leucocytes 12,600, poly. L. 68 per cent, L. L. 12.3 per cent, S. L. 9 per cent, B. 7 per cent, E. 0 per cent.

Treatment: Under chloroform anesthesia pustule was excised, free incisions made along entire arm and hand, resection of large axillary glandular masses done, and wet bichloride gauze drainage applied. Death in nineteen hours from uremia.

Autopsy showed fatty heart, chronic pleurisy, edema of lungs, fatty infiltration of liver, chronic diffuse nephritis with acute hemorrhagic nephritis. Organism recovered at autopsy from heart, liver, and spleen. Histologic study showed anthrax bacilli in lungs, liver, spleen, pancreas, and kidney, and confirmed the autopsy findings. In the kidney many capillaries were almost plugged with bacilli.

Note.—A load of hides, the only hides handled, hauled three days before illness began.

Case 5.—S. S., male, aged twenty-four, morocco-worker, admitted October 23, 1906, third day ill with anthrax of left neck (see accompanying photograph). Onset not definitely learned. (Patient a Russian unable to speak English.) On admission a brown crust was seen in left neck with serum oozing from beneath it. The entire neck was edematous and greatly swollen, with marked induration about this crust. Temperature 103°, prostration great. Smear preparation from serum and cultures studied later showed anthrax bacilli. Blood

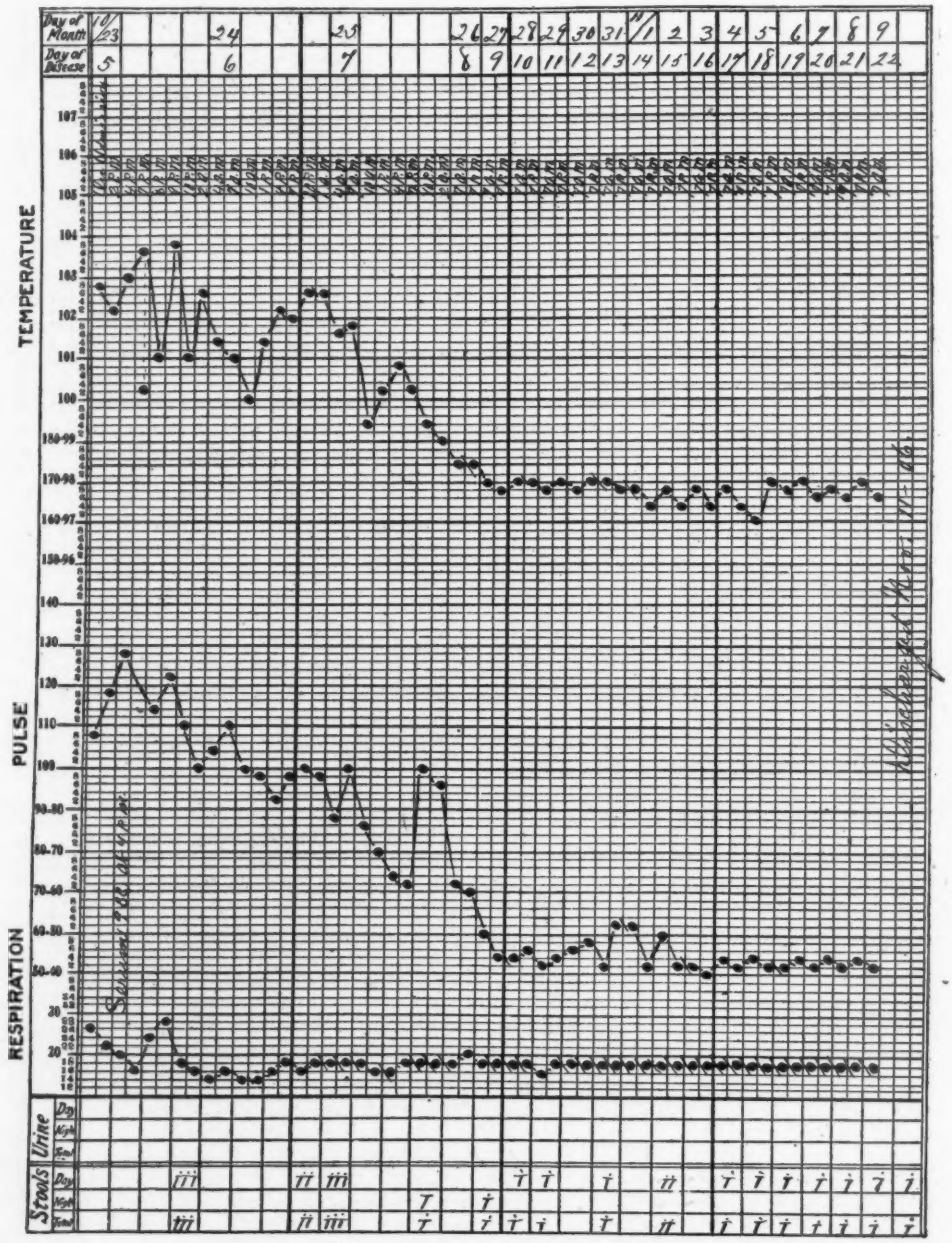


CASE 5.—Photograph taken the fifth day of disease. Note great edema of neck, shoulders, and breasts.

CASE 5.—Photograph a few days before being discharged.

culture, nose culture, and sputum studies negative for anthrax. Leucocytes 20,600, poly. L. 77 per cent, L. L. 19 per cent, S. L. 4 per cent.

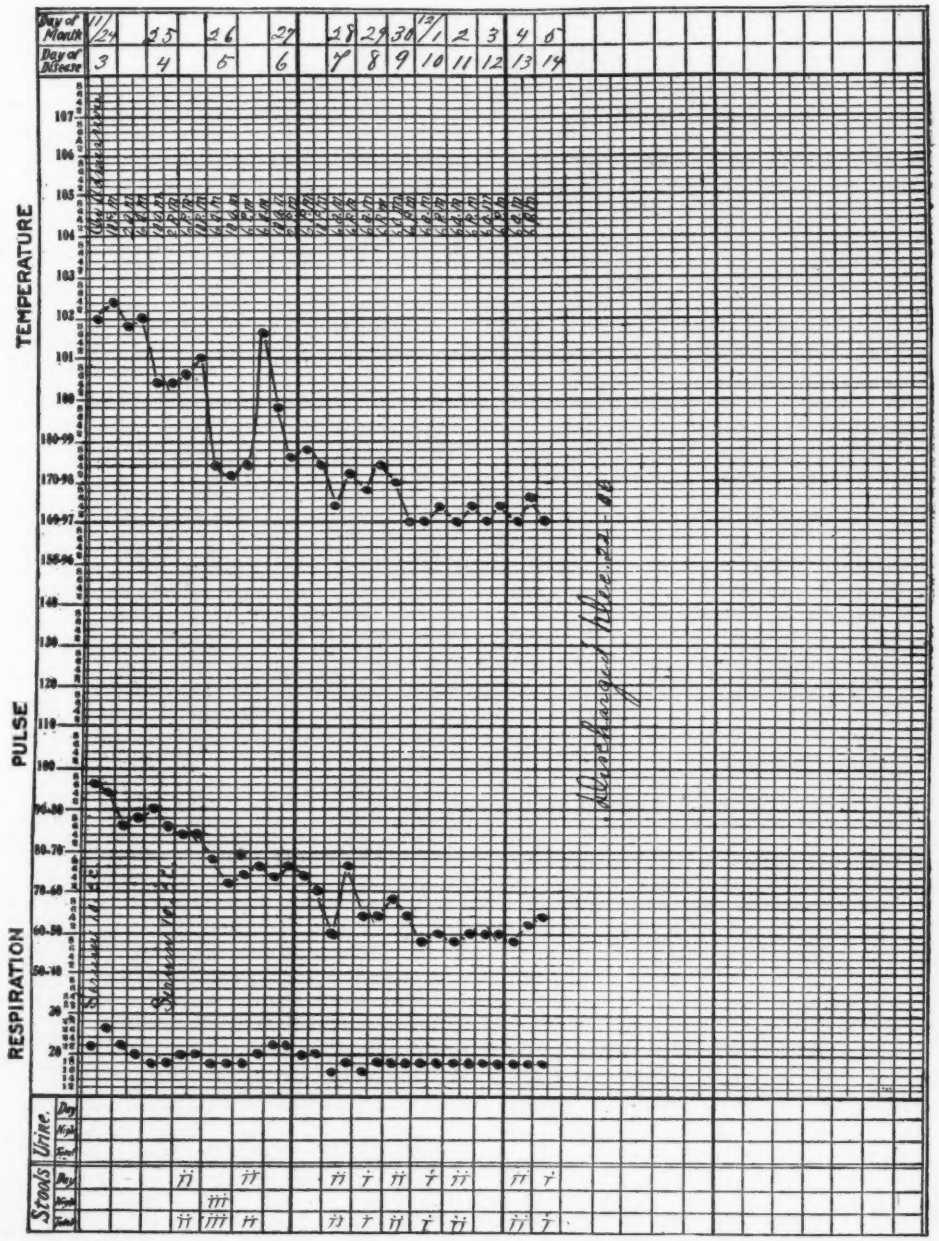
Treatment: Excision of lesion under cocaine anesthesia; wound dusted with powdered bichloride of mercury and dressed dry. Nine cubic centimeters of Sclavo's antianthrax serum given intravenously (remaining supply destroyed by accident). Recovery rapid, but after two days complicated by slight secondary infection and pus



CASE 5.—Chart showing temperature, pulse, and respiration.

formation in edematous area of neck and upper chest. (See photograph when well.)

Case 6.—L. H., male, aged twenty-seven, hair-sorter, admitted November 24, 1906, third day ill with malignant pustule of left neck. Onset small, painful papule, chilly sensation, same day. Second day, severe headache, chilly, fever, loss of appetite, painful neck, and swelling noted about the lesion. Third day, dizzy, chilly, headache, loss of appetite, edema up to zygoma and down to near clavicle, induration immedi-



CASE 6.—Chart showing rapid decline in temperature under combined serum and surgical treatment.

ately adjacent to typical pustule. Temperature on admission 102°. Smear preparation from pustule and culture confirmed diagnosis. Blood culture sterile, leucocytes 9800, poly. L. 67 per cent, L. L. 31 per cent, S. L. 1.7 per cent, E. 3 per cent.

Treatment: Excision under cocaine anesthesia, powdered bichloride in wound, with dry dressing. Ten cubic centimeters antianthrax serum intravenously, and repeated in same manner twenty-four hours later. Uneventful recovery.

Case 7.—T. C., male, aged twenty-six, hide-sorter, admitted November 24, 1906, fifth day ill with anthrax of right lower lip, one-half inch below vermilion margin. Onset began as painful "pimple," opened by barber while being shaved on second day. Third day, a distinct hard areola about the pustule; more pain and swelling. Fourth day, severe pain, swelling of right chin and lower part of face; tender, swollen glands under chin. Fifth day, lesion half-dollar in size, brownish in color, crusted, pussy around edges, with edema of chin and entire lower lip, and induration in submental glandular region. No prostration on admission; temperature 99° F. Smear preparation, cultures, and white-mouse inoculations tallied in showing anthrax bacilli. Leucocyte count 13,600, poly L. 77.5 per cent, L. L. 13 per cent, S. L. 9.6 per cent, E. 0 per cent.

Treatment: Excision of pustule, powdered bichloride in wound, dry dressing. Slight rise in temperature two days after operation. Cauterization slough extended through to the mouth, causing a sinus, making convalescence tedious. Recovery.

Case 8.—A. S., male, aged forty-three, hide-stacker, admitted January 8, 1907, twelfth (?) day ill with anthrax pustule of right side of forehead. Lesion began as "small, very painful pimple," which patient opened with finger-nail. Second day, larger, crusted, surrounded by areola, painful, some swelling of right forehead. Third day, chill, fever, more swelling of right forehead, serum weeping from beneath crust, eye swollen. For the next five or six days the swelling lingered about the eye and forehead and right side of face, part of the time the eye being closed and greatly indurated. No severe pain during this time, and work was continued until the seventh day of illness. Medical opinion was sought because of annoyance from serum running over face, and the swollen eye. Temperature 100° on admission, eye closed by hard edema, face swollen on right side, and serum flowing over eye and cheek.

Smear preparation, culture studied later, and animal experiments showed the lesion to be anthrax. Leucocyte count on admission 18,800, poly. L. 63.7 per cent, L. L. 26.3 per cent, S. L. 8.7 per cent, B. 3 per cent, M. 3 per cent. Blood culture sterile.

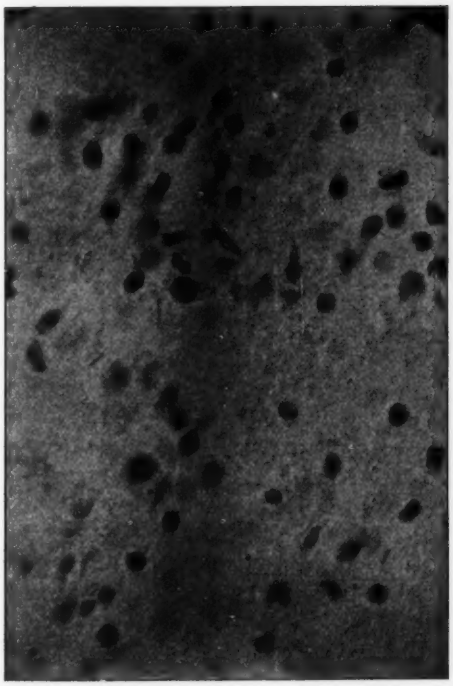
Treatment: Pustule excised under local anesthesia; 10 Cc. antianthrax serum given intravenously, repeated twice next day and day following, then a daily dose of 20 Cc. for two days being given; total 90 Cc. During this time patient had fever and great mental confusion. Under hyoscine and whisky mental equilibrium was restored (probably delirium tremens). Patient excessively heavy drinker. Recovery in seventeen days.

Case 9.—J. S., male, twenty-nine years of age, hide-stacker, admitted February 15, 1907, about twenty-first day ill with anthrax pustule on left side of face. Onset painful "pimple," itching and burning. Top removed with razor. Second day, face swollen, great pain, headache, no sleep. Third day in bed, all symptoms worse. About fifth day visited physician and received ointment for local use (probably ichthyol). Swelling continued for one week longer, and greater part of time was in bed; the third week swelling subsided, except in glandular area. On admission a typical crust of anthrax was seen about the middle of the left cheek with a good deal of glandular swelling beneath the left jaw. Smear and culture preparations in the Pennsylvania Hospital showed anthrax bacilli, and smear preparation by Dr. Percival in the Municipal Hospital confirmed these findings. Blood culture sterile. Leucocyte count 19,200.

Treatment: Antianthrax serum, 12 Cc.

intravenously, and a daily dose of 10 Cc. for four days; total 52 Cc. Lesion undisturbed, but was kept covered with moist bichloride dressing. Recovery with complete healing in twenty-three days. No organisms found in culture made from site of pustule twelve days after admission.

Case 10.—H. P., male, aged forty-five, stevedore (unloaded cargo of hides), admitted March 7, 1907, fifth day ill with anthrax pustule of left neck. Onset painful "pimple," no constitutional symptoms experienced; swelling noted third day, and slight fever on the fourth day. A brown crust 4½ millimeters in diameter, with a red areola one millimeter wide surrounded with moderate edema extending to the ramus of the jaw and down to the clavicle, constituted the picture on admission. No serum exuded beneath crust. Smear preparation, culture, and white-mouse inoculation each showed the bacillus anthracis. Blood culture eighteen hours after admission showed anthrax organisms. Leucocyte count 9600, poly. L. 70.3 per cent, L. L. 18 per cent, S. L. 11.4 per cent.



Case 10.—Photomicrograph by Prof. Allen J. Smith, showing section of spleen with many anthrax organisms. High-grade coagulation necrosis not well shown. Section prepared by Dr. George B. Foster.

Case 10.—Photomicrograph showing section of lung with numerous anthrax bacilli. Section prepared by Dr. George B. Foster; photograph by Prof. Allen J. Smith.

Treatment: 20 Cc. of antianthrax serum subcutaneously, moist bichloride to eschar, 2 ounces of whisky every fourth hour. During the next twelve hours edema extended around the neck and over the chest to nipples, up to the middle of the forehead on both sides, and some difficulty of breathing developed. Sixteen hours after admission 40 Cc. serum given intravenously and repeated in three hours. Twenty-four hours after admission edema extended over trunk to upper third of thigh, over face to top of forehead, and over the back in its upper half. As a last resort the pustule was excised under cocaine anesthesia, ½ grain of cocaine being used. One-half hour later, while retching, patient developed asphyxia, followed by convulsions and rapid death.

Autopsy showed edema of lungs, chronic pleuritis, acute splenitis, fatty infiltration of

liver, chronic intersititial nephritis with acute nephritis superimposed.

Histological study showed anthrax organisms in lungs, liver, spleen, and kidney, and confirmed the autopsy findings.

Note.—Unloaded cargo of hides, the first in months, three days before illness was noted.

Case 11.—Mrs. S., aged thirty-five, female, hair-sorter, admitted March 7, 1907, fourth day ill with anthrax pustule of right side of neck. Onset anorexia, chill, headache (all noted before papule was seen). Pain in region of papule first called attention to it.

Symptoms grew gradually worse with swelling in the region for three days, although she continued to work. Her employer, Mr. Peter Woll, Jr., diagnosed her condition as probably being anthrax and sent her to us for opinion. On admission a brown eschar one centimeter in diameter with a red areola was seen in the middle of the right cheek. Some edema of right half of the face and side of the neck. Smear preparation, culture, and white-mouse injection proved the anthrax bacillus. The mouse inoculation suggested low virulence. Leucocyte count 7400, poly. L. 80 per cent, L. L. 14 per cent, S. L. 6 per cent.

Treatment: 20 Cc. Sclavo's serum intravenously, followed in twenty-four-hour intervals by 20 Cc. subcutaneously; total 60 Cc. Pustule not disturbed but covered with moist bichloride dressing. Recovery in eleven days.

Case 12.—S. C., male, aged seventeen, hair-washer, admitted April 2, 1907, fourth day ill with anthrax pustule of right cheek. Onset painful, itching "pimple." On third day some swelling and a dried central crust formation. On admission central crust 2½ centimeters in diameter with a small red areola, no fever. Smear preparation and cultures at Pennsylvania Hospital showed anthrax bacilli; not confirmed by us. Leucocyte count 58,000, poly. L. 75.6 per cent, L. L. 18.5 per cent, S. L. 2.5 per cent, E. 3 per cent, B. 5 per cent.

Treatment: 20 Cc. antianthrax intravenously in belly wall, followed by 20 Cc. next day. A moist bichloride dressing applied to the pustule, otherwise not disturbed. Recovery in seven days.

Case 13.—M. M., male, aged seventeen, hair-comber and washer, admitted April 14, 1907, fifth day of anthrax; pustule on right cheek. Onset "itching pimple," increasing each day in size with swelling extending gradually to ramus of jaw, and by fourth day to submaxillary glandular region. On admission denies having been ill and complains only of local distress. No fever was found. Anthrax bacilli found in smear preparations and in culture from pustule. Guinea-pigs inoculated died in twenty-three hours.

Treatment: Pustule excised under cocaine anesthesia; powdered bichloride of mercury dusted in wound and a dry dressing applied. Ten cubic centimeters antianthrax serum given in midcephalic vein and 5 Cc. subcutaneously. Rapid recovery; discharged in eight days, wound free from anthrax bacilli, but not yet fully healed.

Case 14.—S. S., male, aged twenty, clerk for hair-dealer, and often handled bales of hair. Admitted May 31, 1907, third day of

Case 14.—Photograph showing anthrax lesion of chin.

anthrax on the right side of chin. Onset painful, itching papule, opened while shaving, followed by scab formation, and painful induration with loss of appetite. Third day, chill, fever, and malaise. On admission

temperature 104°, central brown eschar 2 centimeters in diameter, with seropurulent marginal discharge. Very little swelling, but marked induration about pustule (see photograph). Smear preparation in Pennsylvania Hospital and smear preparation and cultures studied here showed the anthrax bacillus. Leucocyte count 18,000, poly. L. 72.2 per cent, L. L. 6 per cent, S. L. 2 per cent, E. 0 per cent, B. 4 per cent.

Treatment: Excision under cocaine anesthesia; wound dressed with bichloride powder. Ten cubic centimeters Sclavo's serum given intraveneously, and repeated next day. Prompt recovery. Discharged in fourteen days, with wound not quite healed.

Case 15.—P. S., male, thirty-four years, hair-spinner, admitted August 26, 1907, second day ill with anthrax pustule of right cheek. Onset itching sensation at site of papule, later smarting noted, and "pimple formation." Swelling at this site by second day, with slight fever. On admission a central lesion resembling a ripening pustule ¼ inch in diameter encircled by a red areola ¼ inch wide, the whole surrounded by hard induration; the swollen area extended to the submaxillary region, with distinctly palpable glands under the middle of the right jaw. Temperature 100°. Smear preparation and culture made by Mr. Paul G. Weston showed the anthrax bacillus. Leucocyte count 10,000 per centimeter. Blood culture sterile.

Case 15.—Photograph showing a typical second-day anthrax pustule. Note striking resemblance to a vaccine vesicle.

Case 15.—Photomicrograph showing findings in smear preparation made to confirm a diagnosis of anthrax. Preparation by Dr. Percival.

Treatment: Under cocaine anesthesia free excision was practiced; wound painted with pure phenol, followed in a few minutes with pure alcohol, and in five minutes covered by 1:1000 moist bichloride dressing. Ten cubic centimeters antianthrax serum given intravenously and an ounce of whisky by mouth four times a day. Next day swelling increased in region; 1:2000 bichloride dressing applied, and 30 Cc. of serum given intravenously. Second day after operation swelling was less noticeable, and culture taken at this time showed pure growth of anthrax. Wound dusted with bichloride powder and serum given subcutaneously. Great swelling followed bichloride irritation, and a large vesicle formed about the wound. Further doses of serum given subcutaneously; total 120 Cc. Under local application of saturated solution magnesium sulphate and ice-bags the swelling subsided. A good recovery (somewhat tedious) followed.

Note.—Pronounced early symptoms with persistence of organisms after vigorous treatment suggested great virulence. Animal experiment not done.

A NEW METHOD OF TESTING THE FUNCTIONS OF THE DIGESTIVE APPARATUS.[1]

BY MAX EINHORN, M.D.,

Professor at the New York Postgraduate Medical School, New York.

Any improvement in diagnosis is usually accompanied with therapeutic success.

The testing of the functions of the stomach has entirely changed the treatment of diseases of this organ.

For a long time clinicians have been anxious to find a suitable method for ascertaining the functions of the bowel in intestinal disorders. Most chemical analyses of the feces, which are very complicated and tedious, gave too many varying results to be of clinical value.

Schmidt's test-diet for the examination of the feces marks a decided advance, the only objection being that for general use this method of examination is too tedious (it takes two to three days until feces are obtained from the test-diet), and the results (microscopical examination for starch and muscle fiber) are not sufficiently distinct.

For several years I have endeavored to work out a practical method for testing the functions of the intestinal tract, and the result of this work I would like to submit to your valuable judgment for kind consideration.

Method.—The principle of the method consists in giving—instead of examining the entire stool—test substances with the food to the patient and watching the fate of the latter. This can best be accomplished by attaching the test substances to beads, giving them to patients and recovering them after they have passed the digestive tract. These beads are then examined in order to see whether the substances have disappeared or not. This method is designated for short as the bead test.

Practically this test is done as follows: Patients are given in a gelatin capsule a string of beads with the following substances: catgut, fish-bone, meat, thymus, potato, mutton fat. After administering the capsule every stool is examined with the stool sieve until the bead string has been recovered. If diarrhea is present the sifting may not be necessary, as the bead string can readily be seen (usually at the bottom of a glass vessel).

Under normal conditions the bead string appears after one or two days. It is then rinsed in cold water and examined. If digestion is normal we find that catgut, meat, and potato (except the skin) disappear entirely, thymus and fat almost entirely, whereas the fish-bone usually disappears, but occasionally it may be present. The nuclei of the thymus always disappear. In pathological conditions deviations from the normal are observed not only in regard to the time of recovery of the beads (disturbances of motility), but also in regard to the presence of the food substances (disturbances of the digestive function).

Whereas the motility of the digestive tract can be clinically determined by the periodicity and frequency of the movements of the bowel, as yet we have no means of judging the digestive process in the intestine. I will therefore confine my remarks to the examination of the digestive functions.

I have employed the bead test in nearly 200 patients, and believe that it is well suited for obtaining an insight into the digestive process.

Contrasting with the usual stomach examination—indicating the beginning of the digestive process—the bead test shows us the result of the entire process of digestion.

Roughly speaking, the entire field of gastric and intestinal dyspepsias (without grave organic lesions) may be divided into two groups:

1. Cases with apparently normal digestive functions (true nervous dyspepsias).

2. Cases with functional disturbances (functional dyspepsias).

In gastric affections the above classification has been used for some time. For the intestine a similar subdivision has become possible through the bead test.

[1]Read before the Japanese Society for Diseases of the Digestive Organs, Sept. 18, 1907, at Tokio.

It appears more convenient to consider here intestinal disturbances only.

Group I: Pure Nervous Intestinal Dyspepsias.—The patients complain of various symptoms (fulness, wind, restless sleep, inability to concentrate their mind, general weakness, and lack of energy). Examination reveals an entirely negative result. The mobility is good and the bead test shows normal digestion.

Group II: Genuine Intestinal Dyspepsias.—Besides numerous subjective complaints (tension, rumbling, irregular stool, etc.) the bead test shows evident deviations from the normal. This group can be subdivided into two subordinate divisions:

(*a*) Cases in which the digestion of all three nutritive substances (albumen, fat, carbohydrate) is disturbed—"Dyspepsia intestinalis universalis seu completa."

(*b*) Cases in which the digestion of one or two nutritive substances is faulty—"Dyspepsia intestinalis partialis."

This classification of functional intestinal diseases enables us to make a more accurate diagnosis, and at the same time gives us certain indications for the treatment.

In the first group of pure nervous intestinal dyspepsias without any functional disturbances it will not be necessary to prescribe any special diet or treat the intestine itself; we must rather strengthen the nervous apparatus (hydrotherapy, massage, climate, suitable occupation without overexertion, etc.).

Group II of genuine functional intestinal dyspepsia will require a suitable diet: For dyspepsia intestinalis completa, first a fluid diet, later food in finely subdivided form; in partial intestinal dyspepsia we must limit the amount of those food substances the digestion of which is disturbed. Medicinally we can also proceed with more certainty and success.

In dyspepsia intestinalis universalis, also in those forms of dyspepsia intestinalis partialis in which the albumen or fat digestion was disturbed, the pancreas preparations (especially pankreon) seemed to me to be of benefit.

In that great class of intestinal dyspepsia in which the starch digestion alone is disturbed, taka-diastase (Takamine) has proved of especial value.

The dark field of intestinal diseases still lies almost untilled. Let me hope that the bead test may in the hands of all of us contribute its mite to the clinical exploitation of this important branch of human pathology.

THE TOXIC EFFECTS OF UROTROPIN.

BY JOHN GILLESPIE BEARDSLEY, M.D., L.R.C.P. (LONDON),
Physician to the Phipps Institute and Assistant Physician to the Out-patient Department of the Jefferson Medical College Hospital, Philadelphia.

Very few new drugs have proved as useful and generally satisfactory to the profession as has urotropin. This is a trade name for the pharmacopœial preparation hexamethylenamina, $C_6H_{12}N_4$, which is made by the action of formaldehyde upon ammonia. Other trade names which are supposed to represent the same combination are formin, cystogen, aminoform, cystamin, etc., while helmitol is a preparation of urotropin combined with citric acid.

Urotropin was introduced by Nicolaier, of the University of Berlin, in 1895 as a solvent for uric acid concretions, but later was advocated as a diuretic, and more particularly as an agent to prevent the growth of bacteria in the urine. It is, however, as a urinary antiseptic that the drug has proved its worth. Widowitz was the first to advise its use in scarlet fever, and the good results which he reported in the prevention of nephritis in this disease were confirmed by Buttersack, Murua, Lubowski, Fuchs, and others.

Shortly after its introduction many observers noted that urotropin exercised beneficial effects upon cases of cystitis, and a little later Guaird, Easton, Richardson, and Coleman found that the bacilluria during and following typhoid fever could be controlled by its use. As with any new drug that suddenly acquires a reputation

for value and safety, there were many who used it in excessive doses and without precaution as to its proper dilution, and, as could have been anticipated, a few cases of toxic action were reported.

Knowing that the virtue of the drug lies in the liberation of nascent formaldehyde in the glomeruli and tubules of the kidney (this has been denied by several observers), neutralizing the toxins and destroying the germs of disease, and recalling the action of formaldehyde, even when diluted, upon any portion of the body or upon the various mucous membranes, one can readily understand how from the careless use of this drug toxicity may result. That a drug may be of great value and still possess elements of danger in its use is true of most active remedies, and urotropin is not an exception.

There is scarcely a drug in common use to-day concerning the value and safety of which can be heard so many diametrically opposed opinions. Many physicians state that urotropin in their hands has proved a particularly useful agent and that they have yet to see any bad results from its administration; others state that the remedy has proved disappointing to them and in many cases has brought about complications, which, in their opinion, would be sufficient to cause it to be placed in the list of unsafe drugs. Between these extreme views we find the opinion of the practitioner whose experience has taught him the value and also the danger of the drug, and he uses it as he would use any other toxic substance, by being constantly upon the watch for any signs of toxicity. Despite the common knowledge of the occasional bad effect of urotropin, when one consults the literature upon the subject he will find very few cases have been reported in which the drug caused complications, and my purpose in calling attention to this subject is to record three cases of the toxic effect of urotropin and to review the literature of the subject to date. The three cases to be reported are from the out-patient medical department of the Jefferson Medical College Hospital, in the service of Dr. J. C. Wilson, and have been seen during the last two months.

The first case was that of an aged man with a well-marked cystitis, due to retention of urine by an enlarged prostate gland. The urine was examined and found to contain a quantity of pus, but was acid in reaction. The patient was given urotropin in five-grain doses three times daily, and was warned to dissolve the tablet in a large glass of water before taking it. The patient returned in two days with the complaint that he had suffered much pain in the region of his bladder and was compelled to urinate much more frequently than before. He stated at this time that he was "passing blood," and a microscopical examination of the urine at this time revealed the presence of blood. In two days after the drug was discontinued no blood cells were found, but when two grains of the drug was again given blood cells at once appeared in the urine.

The second case was that of a young woman who was given urotropin to clear an alkaline urine which showed well-marked phosphaturia. After taking forty grains of the drug in five-grain doses the woman complained of intense itching of the skin, with a sense of discomfort in her abdomen. An examination of her chest and back revealed the presence of a well-marked scarlatiniform rash. The urine contained no blood cells, and the reaction of the urine was acid at this time. The rash disappeared during the afternoon of the day it was first seen, having been visible about six hours. Several days later the same patient received, without her knowledge, two grains of the same drug, and in two hours the same rash appeared accompanied by severe itching.

The third case was a man of seventy-two years, who walked into the out-patient department complaining that he was passing blood in his urine. In obtaining the man's history he was asked if he had been taking any medicine, and he answered that having had difficulty in passing his urine he consulted a physician, who prescribed for him, giving him some round tablets. He had taken four of them, when he had burning pain in the region of his bladder which radiated to his urethra, and shortly after this when he passed his urine he noticed

the last few drops were colored with blood. Investigation revealed the fact that the tablets were of urotropin, being five grains each.

In the *Pennsylvania Medical Journal* for June, 1907, the writer recorded three cases of hematuria due to small doses of urotropin, in none of which had more than thirty grains been administered. Having previously regarded the drug not only a valuable one, but with cautious use as to dosage and dilution one free from danger, even when its use was continued over long periods of time, these instances of toxic action coming within such a short period of time prompted me to consult the literature for similar cases.

The first account of any toxic action of urotropin was made by Nicolaier, who found that when he administered this remedy over long periods of time, and particularly in the large doses which he at this time considered proper, the patients began to complain of pain in the bladder with frequent micturition, and when the urine was examined microscopically a few red cells were found. Nicolaier at once reported the danger of overdosage and advised smaller amounts. The next account of any disagreeable symptoms following its use is reported by Schiller in 1899, who found that when fifteen grains had been administered in one case it produced burning pain in the abdomen and bladder.

W. Langdon Brown reports two cases of hematuria, both in typhoid fever patients who had received ten grains three times daily. The first developed pain in the bladder after taking 60 grains, and hematuria (macroscopic) was caused by 150 grains. The second patient developed pain in the bladder after 180 grains had been administered, and passed blood about the same time.

Another case developed hematuria, but as the man was also taking turpentine at the time it cannot with certainty be ascribed to urotropin.

Janet reports one patient with hematuria and one other with severe symptoms of renal colic due to the administration of small doses of this drug.

Millijan records the case of a young woman of eighteen years who was given urotropin as a diuretic in 5-grain doses, and when she had taken 105 grains complained of severe pain in the abdomen and passed blood in her urine.

Griffith reports that in the case of a young woman patient who was given the drug in 5-grain doses, well diluted, when 30 grains had been administered the patient complained of pain on urination, and of severe backache, swelling of the eyelids, weakness, and nausea. An examination of the urine showed a large amount of albumin, which before the drug was taken had been absent.

Forbes reports that in one patient, a man of sixty-two years, with mild cystitis, doses of 5 grains three times daily were administered, and when the patient had taken 90 grains he developed diarrhea, abdominal pain, and macroscopic blood in the urine.

Coleman reports an interesting case of a female patient in whom seven and a half grains of the drug caused hematuria and hemoglobinuria. That there could be no mistake as to the etiology, after several days, and without the patient's knowledge, he administered the drug again and the same symptoms again occurred.

Fuchs reviews the literature and calls attention to the fact that eight cases of hematuria followed the use of urotropin.

Easton records two cases of hematuria and three others of pain on micturition, also several other cases in which a few red blood cells were found on microscopical examination of the urine, which disappeared shortly after the drug was discontinued.

Nicolaier reported an interesting case in which a boy aged eleven years was given four grains of urotropin twice daily for some time and no bad effects were seen. Some time later the boy was again given urotropin, and a short time after the drug was administered he developed pain on urination and hematuria.

MacHardy reports that one patient who had received but two doses of two and a half grains each developed hematuria.

Gordon reports that after taking 115

grains of urotropin one of his patients developed hematuria, and later when the drug was once more administered the same symptom returned.

Von Karwowski reports a case of hematuria caused by small doses of urotropin.

Goldsmidt notes two patients in which hematuria occurred after taking small doses of urotropin for a short period of time.

Mogli reports several cases of hematuria, but it is only fair to state that he advised much larger doses than are now considered safe.

Parry, Griffith, and Buttersack have all reported severe albuminuria due to the irritant effect of the urotropin.

Kelly, Pederson, Grosgklik, Dreschfield, Biss and Gotzl, and Salus all report cases in which there has been pain in the abdomen following the use of this remedy, and several have noted a pain in the region of the kidneys.

Richards and Drake-Brockman have seen diarrhea caused by small doses of the drug, and this is often complicated by griping pain.

Suppan states that in two of his patients there developed headache and ringing in the ears caused by urotropin, while Coleman called attention to the fact that rashes of various kinds were infrequently seen following its use.

Biss and Casper have reported each a patient who developed hematuria, while Petty and Da Costa by communication report two cases in which this complication developed.

This review of the literature for the toxic effects of urotropin is not a complete one, and consists of a review of a few of the leading journals, but enough has been found to be suggestive.

Considering first the toxic effect of the drug upon the gastrointestinal tract, we find that unless the drug is well diluted, and in certain cases even when well diluted before administration, symptoms of gastrointestinal irritation are very common. That there are patients who have an idiosyncrasy for this drug cannot be doubted, and there is also the possibility of an adulterated or at least an impure drug to be considered. Concerning the occasional development of a rash following the use of urotropin, this complication is so infrequently observed that it would seem most reasonable to ascribe it to unusual susceptibility, for we well know that there are certain persons to whom the vapor of formaldehyde, even when greatly diluted, acts as a most decided toxic agent, and it is not unusual for one person in a family during the fumigation of a room or rooms to develop a rash. The headache and ringing in the ears can be accounted for in the same way. That individuals differ in their susceptibility to this drug is well illustrated in the reports of the cases which developed hematuria during its use. In one or two patients blood was found macroscopically where only five grains of the drug had been taken, and that well diluted, while other patients continue to take thirty grains a day for weeks without apparent harm.

That many of the slight toxic symptoms are not ascribed to the drug can be readily imagined, and it is at least suggestive that in one report dealing with a large number of scarlet fever patients to whom the drug had been administered from the first, although but one case of toxic action of the urotropin was recorded, there happened to be a larger number of hemorrhagic cases of the disease with blood in the urine than had been seen in years.

That urotropin is often an irritant to the kidneys cannot be doubted, but McGuire has proved by experiments upon himself that solutions injected into the body cause albuminuria at once, and hematuria in a short time. In one of his experiments he states that directly after the injection he was seized with cramp-like pains in the abdomen, and immediately there appeared blood in the urine.

That urotropin is used many times without bad effect is most certainly true, that it is an agent of great value is also true, but that there are many patients who suffer great pain and discomfort because of its use cannot be doubted; and that many of these cases are never published, and that the bad effects of the drug are often ascribed to the disease being treated rather

than to the remedy at fault, is a plausible view.

In conclusion it seems scarcely necessary to state that although urotropin is a valuable drug it is by no means the harmless agent which the profession have been led to believe, but when used a careful watch should be kept for symptoms of toxic action, and frequent examinations of the urine should be made, as red blood cells can be found in the urine before symptoms are complained of by the patient.

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THE TREATMENT OF TRACHOMA.[1]

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So many pupils of the public schools of many of our large cities during the past few years having been found to be affected with trachoma, and so many areas of infection being known to exist in our large centers of population, it may not be amiss to discuss before this society the most satisfactory methods for treating the disease, inasmuch as a large proportion of such patients first come under the observation of the family physician.

It is not within the province of this paper to discuss the symptomatology or diagnosis of the affection. Suffice it to say that it must not be mistaken for vernal conjunctivitis, a disease which is being observed more frequently at the present time than in former years, and which occasionally resembles in some respects the condition of trachoma.

If we have a case of trachoma of comparatively recent origin which has not reached the stage in which the various distortions of the lids with the accompanying corneal changes are found, there are three chief conditions to be met. We must remove all excessive secretion, a condition eminently adapted to the growth of pathogenic microörganisms; we must remove the trachoma granules with as little damage as possible to the conjunctiva, thus preventing to a certain extent the third condition, or subsequent distortion of the lid, with the accompanying corneal changes. For the first purpose, notwithstanding the many recent adverse reports concerning the action of the drug, my best and most rapid results have been obtained with argyrol. The patient is instructed to irrigate thoroughly the conjunctival cul-de-sac with a physiologic saline or boric acid solution every two, three, or four hours, according to the character and amount of secretion, and immediately thereafter to instil a drop of a 25-per-cent solution of argyrol. The argyrol

[1]Read before the Philadelphia County Medical Society, Nov. 13, 1907.

solution should be freshly prepared from the crystals at least every ten days, and should never be employed after it has become inky-black rather than brownish in color. My patients have employed solutions as strong as 50 per cent, though the 25-per-cent solution seems to answer the purpose just as well, and I have never seen any ill result follow its use. In my experience it is seldom necessary to employ anything more to rid the conjunctiva of excessive secretion; but in a small number of cases in which the secretions have been present for a long time and in which the lacrimal drainage is bad and the conjunctiva soft and macerated, an astringent is required in addition to the treatment described above. In this class of patients topical applications of weak solutions of silver nitrate, zinc sulphate, or the alum crayon should be made once a day to the everted conjunctiva. These will usually produce the desired result. In a few patients it may be necessary, however, to slit the lower canaliculus of each eye in order to effect better drainage.

To remove the trachoma granules with as little destruction and subsequent distortion of the conjunctiva as possible, in my experience no method equals that of expression. It matters not whether they are expressed individually by means of small forceps devised for the purpose (and this is the better plan if they are few in number), or whether they are expressed in groups by some of the larger forceps, such as Knapp's or Claiborne's roller forceps. Personally, I prefer Claiborne's instrument because the spicules on the rollers penetrate each granule, thus permitting the contents to be more easily and more thoroughly expressed. The important point is to express the contents of all the granules, and unless one is careful a few in the retrotarsal folds or at the angles of the eye will be missed. If the trachoma granules are few in number, local anesthesia is sufficient; if, however, they are numerous, a much more efficient operation can be performed with the patient under the influence of a general anesthetic. It is my custom just before expressing the contents of the granules, if they are numerous, to make superficial scarifications of the conjunctiva, and immediately after the expression to rub into it thoroughly, by means of a pledget of absorbent cotton on the end of a wooden applicator, a solution of mercuric chloride 1 to 500, or a solution of copper sulphate grs. xl to f℥j. If the scarification of the conjunctiva has been extensive, a bichloride ointment is incorporated and cold compresses employed for a couple of days; otherwise only cleansing lotions are necessary.

The subsequent treatment after the subsidence of the acute inflammation produced by the expression consists in topical applications to the everted conjunctiva by the surgeon and in instillations by the patient. The crayon of copper sulphate in those cases that can tolerate it (in my experience comparatively few), solutions of copper sulphate gr. x-lx to ℥j, boroglyceride 30 to 50 per cent, and tannin and glycerin grs. xx-lx to ℥j, are applied at first once a day, and as improvement is noted the time between the applications is lengthened. Sometimes a patient will cease to improve under one of these medicaments, and another must be substituted. The patient may himself instil three or four times a day a drop of glycerin and tannin gr. x to ℥j, or boroglyceride 10 per cent; or sulphate of copper may be employed according to the method of A. E. Prince, of Springfield, Illinois. It is his custom to give to each patient a two-drachm vial of a 10-per-cent solution of sulphate of copper in glycerin with the following directions: "Dilute one drop in twenty drops of water. Use freely in eyes four times a day. Increase strength; make fresh each time." In his experience it is best to commence with one drop of this solution in twenty drops of water and to use it from four to six times a day. The patient is told to decrease the water as he finds he can tolerate the solution, or to increase the water if the solution proves too irritating. Some patients do not tolerate the treatment very well, but in most patients, in his opinion, it is satisfactory and seems to have effected permanent cures.

After repeated trials of the various medicaments that have from time to time been

recommended to be used as topical applications in the treatment of trachoma, I have always been obliged to return to the employment of the remedies just described as those affording the most satisfactory results. Many trachomatous patients, unfortunately, discontinue treatment as soon as the subjective symptoms have been relieved, and for this reason never receive any permanent benefit. It is most important that the treatment be persisted in for a long time if there is any expectation of effecting a cure.

The Roentgen rays have been tried on a few patients, but my experience with them has not been satisfactory. Solutions of jequirity in gradually increasing strengths have not been employed by me personally, but a number of patients under my care who afterward had this method employed by competent surgeons did not seem to me, when after some months they came under my observation again, to be in any better condition than those treated by the methods to which I have referred.

If the disease unfortunately has passed into that stage in which deformity of the lids and accompanying corneal conditions appear, suitable operative measures for the former and local treatment for the latter are of course required. Under these circumstances it may sometimes be necessary to perform canthotomy, canthoplasty, or some one of the various operations for ectropion, in order to relieve the cornea from mechanical pressure, and the treatment for the various corneal complications does not differ materially from the treatment of similar conditions produced by other causes than trachoma.

Personal care and cleanliness to protect others, isolation for those patients unable or unwilling to take all proper precautions, sanitary surroundings and mode of living, the internal administration of suitable reconstructive and supporting tonics, an abundance of fresh air, sunshine, and nutritious food, all have their places as adjuvants in the management of this troublesome affection.

I cannot refrain from here entering my protest against the United States government for excluding all trachomatous individuals regardless of circumstances. It is generally conceded, I believe, that the disease is contagious through its secretion, and that in the third or cicatricial stage the characteristic secretion has disappeared. If individuals, therefore, affected with trachoma in this stage and fully competent financially to take care of themselves apply for admission into this country, it seems to me to be very unjust that they should be denied admission and be deported. And yet such is the law. In addition to this, who of us can say positively upon eversion of the lids and the most careful examination of a case of non-active cicatricial trachoma, in which not a symptom or condition can be observed except the conjunctival cicatrices of the old inflammation, whether or not he is confronted with a cured case, or a case that may some time in the future give rise to further trouble?

I have observed for many years two patients who in early life were infected with trachoma—one twenty years ago, the other sixteen years ago. Both were treated by competent surgeons, and both recovered without any involvement of the cornea. To the casual observer the eyes are normal. When the lids are everted the cicatrices of the former inflammation are noted everywhere. They are cured cases and simply show the results of the former inflammatory process. There have been no symptoms referable to the lid conditions for years, yet I am sure that any of us examining those conjunctivæ for the first time would suspect that the patients were in a quiescent period of the cicatrical stage of trachoma, and that an examination by our Public Health and Marine Hospital Service would result in similar patients being deported. Until we are able to state positively from a brief inspection whether a given condition of cicatricial conjunctival membrane is a cured case of trachoma or simply a case in the third stage from which more active symptoms may be expected later, the line of exclusion should not be so closely drawn.

Some months ago the following incident came under my observation: About six years ago a native of Syria came to this

country, went to a small town in Ohio, successfully engaged in business, acquired property, and became a naturalized citizen of these United States of America. He sent for his family, consisting of a wife and two children, to join him, but for family reasons the children were left behind with the old folks in Syria when the wife and mother came to this country. Within the past two years these two children, a boy and a girl about ten and twelve years of age, bright, cheerful, and apparently healthy, traveled all the way down the Mediterranean to Marseilles, across France and across the English channel up to Liverpool, thence across the Atlantic to Philadelphia, where they were met by the father and mother, who had come on from Ohio—a trip consuming the better part of two months—to be ordered deported because on the upper lid of one there were two trachoma granules and on the upper lid of the other three trachoma granules, recently developed, and undoubtedly contracted by infection during the long voyage. The father, a citizen of these United States, was able and willing to obtain for these children competent surgical attention, and aside from sentimental reasons and the hardship of the separation of the children and parents it does not seem to me that it should be mandatory to exclude such cases. The stage of the disease, the financial condition of the patient or the patient's relatives, the prospect of the patient never becoming a public burden, in my opinion should all be considered in interpreting the law.

1831 CHESTNUT STREET.

A PHARMACOLOGICAL STUDY OF CANNABIS AMERICANA (CANNABIS SATIVA).

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Much has been said and written by physicians and pharmacists relative to the activity of *Cannabis Sativa* (Cannabis Indica, Mexicana and Americana). It is generally believed that the American-grown drug is practically worthless for therapeutic purposes, and that one must employ the true Cannabis from India in order to obtain physiologically active preparations. The best quality of Indian drug, it is claimed, is that grown especially for medicinal purposes, and consists of the flowering tops of the unfertilized female plants, care being taken during the growing of the drug to weed out the male plants. This notion, according to our experience, is based largely upon error, as we have found repeatedly that Indian drug which contains large quantities of seed is fully as active as the drug which consists of the flowering tops only, provided the seed is removed before it is percolated, and the experiments are based upon a fluid extract or other pharmaceutical product obtained from an equal weight of drug minus the seed. The seeds themselves do not contain the active principle, but may make up a very large percentage of the weight of the drug as it appears on the market.

Several years ago we began a systematic investigation of American-grown hemp. Samples from the following localities were obtained and studied:

1. August, 1905, Mr. Gaumnitz, of the Department of Agriculture of the University of Minnesota, sent us samples of hemp grown on the college grounds.
2. 1906. Also supplied by Mr. Gaumnitz.
3. Grown in Mexico, 1903. Sent in for examination.
4. Grown in Mexico, 1904.
5. Grown in Mexico, 1906.
6. Grown in Kentucky, 1905.
7. Grown in Kentucky, 1906.
8. Grown near Detroit, Mich., 1907.
9. Grown in Kentucky, 1907.

From these several samples of *Cannabis Americana* fluid extracts and solid extracts were prepared according to the U. S. P., and were tested upon animals for physiological activity.

The method of assay is that which one of us (Houghton) devised and has employed for the past twelve years. This method consists essentially in the careful observation of the physiological effects produced upon dogs from the internal administration of the preparation of the drug under test. It is necessary in selecting the test animals to pick out those that are easily susceptible to the action of cannabis, since dogs as well as human beings vary considerably in their reaction to the drug. Also, preliminary tests should be made upon the animals before they are finally selected for test purposes, in order that we may know exactly how they behave under given conditions. After the animals have been finally selected and found to respond to the standard test dose, .010 per kilo, they are set aside for this particular work, care being taken to have them well fed, well housed, and in every way kept under the best sanitary conditions. Usually we have found it desirable to keep two or more of the approved animals on hand at all times, so there may not be delay in testing samples as they come in.

In applying the test, the standard dose (in the form of solid extract for convenience) is administered internally in a small capsule. The dog's tongue is drawn forward between the teeth with the left hand and the capsule placed on the back part of the tongue with the right hand. The tongue is then quickly released and the capsule swallowed with ease. In order that the drug may be rapidly absorbed, food should be withheld twenty-four hours before the test and an efficient cathartic given, if needed.

Within a comparatively short time the dog begins to show the characteristic action of the drug. There are three typical effects to be noticed from active extracts on susceptible animals: First a stage of excitability, then a stage of incoördination, followed by a period of drowsiness. The first of these is so dependent on the characteristics of the dog used that it is of little value for judging the activity of drug, while with only a few exceptions the second, or the stage of incoördination, invariably follows in one to two hours; the dog loses control of its legs and of the muscles supporting its head, so that when nothing occurs to attract its attention its head will droop, its body sway, and, when severely affected, the animal will stagger and fall, the intoxication being peculiarly suggestive and striking.

Experience is necessary on the part of the observer to determine just when the physiological effects of the drug begin to manifest themselves, since there is always, as in the case of many chemical tests, a personal factor to be guarded against. When an active extract is given to a susceptible animal, in the smallest dose that will produce any perceptible effect, one must watch closely for the slightest trace of incoördination, lack of attention, or drowsiness. It is particularly necessary for the animals to be confined in a room where nothing will excite them, since when their attention is drawn to anything of interest the typical effects of the drug may disappear.

The influence of the test dose of the unknown drug is carefully compared with the same dose of the standard preparation administered to another test dog at the same time and under the same conditions.

Finally, when the animals become drowsy, the observations are recorded and the animals are returned to their quarters.

The second day following the two dogs are reversed—*i.e.*, the animal receiving the test dose of the unknown receives the test dose of the known, and *vice versa*—and a second observation made. If one desires to make a very accurate quantitative determination, it is advisable to use not two dogs but four or five, and study the effects of the test dose of the unknown in comparison with the test dose of the known, making several observations on alternate days. If the unknown is below standard activity, the amount should be increased until the effect produced is the same as for the test dose of the standard. If the unknown is above

strength, the test dose is diminished accordingly. From the dose of the unknown selected as producing the same action as the test dose of the standard, the amount of dilution or concentration necessary is determined. The degree of accuracy with which the test is carried out will depend largely upon the experience and care exercised by the observer.

Another point to be noted in the use of dogs for standardizing cannabis is that, although they never appear to lose their susceptibility, the same dogs cannot be used indefinitely for accurate testing. After a time they become so accustomed to the effects of the drug that they refuse to stand on their feet, and so do not show the typical incoördination which is its most characteristic and constant action.

Previous to the adoption of the physiological test over twelve years ago we were often annoyed by complaints of physicians that certain lots of drugs were inert—in fact some hospitals, before accepting their supplies of hemp preparations, asked for samples in order to make rough tests upon their patients before ordering. Since the adoption of the test we have not had a well-authenticated report of inactivity, although many tons of the various preparations of cannabis indica have been tested and supplied for medicinal purposes.

At the beginning of our observations careful search of the literature on the subject was made to determine the toxicity of the hemp. Not a single case of fatal poisoning have we been able to find reported, although often alarming symptoms may occur. A dog weighing 25 pounds received an injection of two ounces of an active U. S. P. fluid extract in the jugular vein with the expectation that it would certainly be sufficient to produce death. To our surprise the animal, after being unconscious for about a day and a half, recovered completely. This dog received not alone the active constituents of the drug, but also the amount of alcohol contained in the fluid extract. Another dog received about 7 grammes of solid extract cannabis, with the same result. We have never been able to give an animal a sufficient quantity of a U. S. P. or other preparation of the cannabis (Indica or Americana) to produce death.

There is some variation in the amount of extractive obtained, as would be expected from the varying amount of stems, seeds, etc., in the different samples. Likewise there is a certain amount of variation in the physiological action, but in every case there have been elicited the characteristic symptoms from the administration of .010 gramme per kilo body weight of the extract with properly selected animals.

The repeated tests that we have made convince us that *Cannabis Americana* properly grown and cured is fully as active as the best Indian drug, which we have sometimes found to be practically inert.

Furthermore, we have placed out quantities of fluid extract and solid extract of *Cannabis Americana* in the hands of experienced clinicians, and from eight of these men, who are all large users of the drug, we have received reports which state that they are unable to determine any therapeutic difference between the *Cannabis Americana* and the *Cannabis Indica*. We are of the opinion that *Cannabis Americana* will be found equally as good and perhaps better than that obtained from foreign sources, since proper directions can be given to the grower, so he can take proper precautions to obtain drug of the greatest value. We expect to give this phase of the subject especial attention during the next few years, to see what improvements may be effected.

CONCLUSIONS.

1. The method outlined in the paper, for determining the physiological activity of *Cannabis sativa* by internal administration to especially selected dogs, has been found reliable when the standard dose, .010 gramme per kilo body weight of the unknown, which is reduced to a solid extract, is tested on the same animals in comparison with the same quantity of a standard U. S. P. extract by an experienced observer.

2. *Cannabis sativa,* when grown in various localities of the United States and Mexico, is found to be fully as active as the best imported Indian-grown *Cannabis sativa,* as shown by laboratory and clinical tests.

EDITORIAL.

SOME OF THE ADVANCES OF MODERN MEDICINE.

Medical progress at the present time in some respects resembles a flooded river rushing toward the ocean. As with all streams in the state of flood it carries upon its surface many methods which have been weighed in the balance and found wanting, and which gradually drift to the bank and there decay, but the largest part of the flood is rich with methods and results, the chief of which have been developed within the last few years. An interesting summary of some of these advances and improvements has recently been presented to us by Sir Richard Douglas Powell, of London, in an address which has been reported in the London *Lancet* of November 9, 1907. He points out that since the last Royal Commission on Vivisection in 1876 almost the whole system of therapeutics has been overhauled and much of it submitted to the test of experiment, many new and valuable remedies have been revealed to us, and, furthermore, during this time has occurred the discovery of bacterial agencies as the essential etiological factors in inflammation, suppuration, and in the causation and spread of all specific diseases, while the researches of Pasteur concerning fermentation have not only reaped many millions of riches in commerce but saved untold thousands of lives and many millions of hours of suffering—human and animal.

It is noteworthy that in 1876 no one disease was known to have a bacterial origin, whereas now almost every acute specific disease has its recognized etiological factor in a bacterium or protozoön. It is true that many of our methods for the purpose of combating these infections, when they have developed, have not progressed as far as we could desire. But on the other hand the improvement in the manufacture and preparation of medicines and in the understanding of their physiological activities has rendered our methods of treatment far more rational than they ever were before, while the introduction of the various antitoxic sera and more recently the employment of vaccines for the purpose of increasing the opsonic state have accomplished, or promised, much in the way of remedial effect.

We are interested to note in regard to the employment of tuberculin as a therapeutic agent that Sir Richard has seen it employed with advantage in a number of cases, but that he thinks it undesirable to employ tuberculin in the stormy periods of active tissue destruction and severe hectic fever, since these phenomena are mainly due to secondary infections and must first be combated by rest and antiseptic measures.

It must not be forgotten also that within a still more recent period of time our knowledge in regard to infection by protozoa has increased to a remarkable degree, and that with an increase in our knowledge of these forms of infection therapeutic measures for combating them have also been brought forward. Aside from the parasite of malaria we know of the cause of Texas cattle fever, the tsetse fly disease, sleeping sickness, and kala-azar.

Closely associated with these advances we must also take into consideration the extraordinary results which have developed in connection with gastric and gall-bladder surgery and in operative interference upon various conditions of renal disease.

Our increasing knowledge of the minute anatomy of a number of organs enables us to understand their physiological function and the pathological changes which take place in them in a much clearer manner than has hitherto been possible. Sir Richard points out that there are a number of histological facts in connection with the auriculoventricular bundle of His, which transfers impulses from the auricular to the ventricular portions of the heart, well wor-

thy of careful study. As long ago as 1883 Gaskell showed that the contraction wave traveled from the auricle to the ventricle through muscular continuity, and Stanley Kent in 1893 demonstrated in the auriculoventricular septum a definite communication between the auricles and the ventricles, although His actually discovered the auriculoventricular bundle of fibers to which his name has been applied. It is interesting to note in this connection that as long ago as 1845 Perkinjé demonstrated the network of peculiar, gray, flat, gelatinous fibers under the endocardium of the sheep, and found that they consisted of large, nucleated cells in bundles, separated here and there by striated muscular fibers. These so-called fibers of Perkinjé were shown by Kölliker in 1852 to be striated and muscular in nature, while very recently Tawara, a Japanese investigator, has shown that these fibers of Perkinjé are the terminal ramifications of the auriculoventricular bundle of His. The fibers begin immediately below the coronary sinus and emerge above in the auricular musculature. They descend downward as a well-defined bundle which divides above the ventricular septum into two branches, one of which passes down and is distributed to the right ventricle and the papillary muscles, while the other passes through an almost cartilaginous orifice to the left side of the septum to be similarly distributed to the left ventricle. Still more interesting in this connection is the statement of Tawara that the ventricular bundle does not branch until it reaches a point near the tip of the ventricle, where it distributes branches to the papillary muscles and spreads over the whole ventricle from apex to base, so that an impulse starting at the beginning of the fibers in the auricle passes to the apex of the ventricle, and thence is distributed in such a way as to transmit a contractile impulse to the papillary muscles, which control the mitral and tricuspid valves, to be followed a fraction of a second later by the contraction of the ventricle itself. These researches make clear to some extent many cases of cardiac irregularity produced by disease or drugs, and aid in explaining how it is that certain functional murmurs may be present at one time and absent at another.

It is also interesting in this connection to note the fact that prior to the discovery of the mosquito as the transmitter of malarial infection the minor railway officials in Italy suffered a mortality of about 33 per cent, a mortality which has been abolished by proper protection from mosquitoes, and by destroying the mosquito in yellow fever districts.

Occasionally, however, the progress of civilization aids in the dissemination of disease. It is known, of course, that with the establishment of commercial relations between different districts disease is transferred as is merchandise, but Brunton has recently called attention to the statement of Colonel Bruce, of the British army, that the presence of Great Britain's power in certain parts of Africa has indirectly resulted in almost exterminating certain parts of the native population. Before British intervention the African tribes surrounding Lake Nyanza were continually at war, and it was quite impossible for natives to travel from this district across the continent. As these wars have ceased under civilizing influences, however, commercial relations have been established and sleeping sickness has been carried into a district where before it was unknown.

The interesting experiments which have been made in regard to the activity of fleas in transferring the plague from rats to human beings are another important advance which bids fair to be almost equal to that of the discovery of the transmission of malaria and yellow fever by the mosquito. Interesting experiments have been made by Liston and others, who found that if guinea-pigs were protected from rat fleas they failed to be infected by the bacillus of plague, even if their cages were smeared with the discharges of plague patients; that is to say, if the guinea-pigs were protected by fine wire-gauze cages, or were hung in cages above inoculated rats at such a height above the ground that fleas

could not jump from the rats to the guinea-pigs, these little animals escaped infection, but at once succumbed when no barrier to the passage of the flea was interposed. As rat fleas bite human beings, it is quite evident that by this manner rapid diffusion of the plague may occur; and so the practical lesson is learned that in addition to ordinary methods of sanitation in combating plague we must destroy not only the rats but the fleas that infest them.

THE DIAGNOSIS AND TREATMENT OF INFANTILE SCURVY.

It is a curious fact that with our advancing knowledge of diet and hygiene the dread scourge of long voyages, sailor's scurvy, has passed out of existence and that in its place infantile scurvy has become a fairly prevalent malady on shore. At the same time that the diet of the seaman has been so arranged that these extraordinary nutritional changes do not occur, the diet of the infant has been so changed that its nutrition is seriously impaired. Many years ago a child, if it were so unfortunate as to be deprived of its mother's milk, received in its place the milk of one of the lower animals, but to-day the unfortunate nursling is provided with various artificial foods which possess only some of the qualities which are essential to the maintenance of a healthy existence. Often these children, for a time at least, become plump and apparently well-nourished, but if the so-called "infant food" which has been given them is continued for too long a period without other foods being added to it, scurvy develops. Of equal importance with the recognition that one infant food should never be administered to a child for a long period of time is the recognition of the fact that the symptoms of scurvy are prone to mislead the practitioner into an erroneous diagnosis. In some instances, pain, tenderness, and swelling in the lower extremities, with or without loss of power of the limbs, misleads the physician into a diagnosis of rheumatism, which is certainly a rare disease in very young children. In other instances, bleeding of the gums, tenderness of the spine, weakness of the back, or the swelling of a single joint leads to an erroneous diagnosis, and we vividly remember one case in which a skilful orthopedic surgeon had condemned a young child to the use of a cumbersome spinal apparatus for the cure of vertebral disease, when scurvy was the real cause of the malady, the child being thought to have spinal disease because it screamed when moved in any way which disturbed its spinal column.

It is also important to remember that it is not only the so-called infant foods which are capable of producing scurvy, for we have seen it develop in children who were receiving sterilized milk without any raw milk, and again, in those children who received milk which had been carelessly heated with the idea of warming it before it was ingested. It is interesting in this connection to note that infantile scurvy is a disease of the children of the well-to-do rather than of the poor, the reason probably being that children of the poor, often through ignorance or carelessness on the part of the parents, receive in addition to the food which is given them by the bottle pieces of fruit or vegetables which they obtain from the table, and at times pieces of meat, it being well known that when once scurvy has developed nothing produces so rapid a cure in any department of medicine as a change of diet and the administration of orange or lemon juice with or without beef juice. Indeed, it is pathetic to see how a child suffering from this disease will, after the first feeding with any one of these articles, reach eagerly for the spoon which contains them the moment they come within the range of its vision.

We would, therefore, remind our readers of the importance of bearing the possible presence of this disease in mind in the treatment of infantile illness. In a recent paper, published by La Fetra in the *American Journal of the Medical Sciences* for June, 1907, he points out that the following diseases are often thought to be present when scurvy is the real cause of the illness:

Rheumatism, acute rickets, arthritis, paralysis from anterior poliomyelitis, syphilitic epiphysitis, sarcoma of the femur, osteomyelitis or deep abscess, purpura in its various forms, nephritis, dysentery, and even intussusception.

THE TREATMENT OF HEMOPTYSIS.

In the editorial columns of the THERAPEUTIC GAZETTE and elsewhere we have repeatedly reiterated our belief that drugs which cause vasoconstriction are of very little if any value in the treatment of pulmonary hemorrhage, first, because the blood-vessels of the pulmonary circulation are but poorly endowed with muscular fibers, and secondly, because as the vessels of the systemic circulation are well endowed with these fibers vasoconstrictor drugs by raising blood-pressure throughout the body actually increase the quantity of blood which goes to the lung.

We have read with considerable interest a communication which has been made to the *Boston Medical and Surgical Journal* of August 15, 1907, by Otis, upon blood-pressure as a guide in the treatment of hemoptysis. He very logically points out that the recommendation of Francis Hare that nitrite of amyl shall be used by inhalation in such cases can only be particularly advantageous in those patients who already have high arterial tension, and many patients with hemoptysis, particularly if the hemorrhage has been free, suffer from a state of the blood-vessels which is quite the opposite of this, although it cannot be denied that since Francis Hare strongly advocated the use of nitrite of amyl a large number of other practitioners have reported good results from its use.

Otis by the use of the sphygmomanometer attempted to determine the blood-pressure in a considerable number of patients. He found in 320 observations upon tuberculous individuals that the average pressure was about 124 millimeters of mercury, which is a little below that of ordinary healthy persons. In 18 cases of hemoptysis the highest pressure was 145 and the lowest was 74, the average being from 109 to 119. The treatment which he employed in these cases consisted in the local application of ice, and morphine combined with atropine, or heroin, if the hemorrhage was persistent and recurrent. The nitrites, in the form of the nitrite of sodium or nitroglycerin, were employed if the pressure was high.

In regard to the time at which hemoptysis is most prone to occur, he refers to the well-known fact that in the majority of cases it occurs at night or in the early morning hours. In 11 out of his 16 cases this occurred, and he quotes Lawrason Brown as agreeing with Howell's explanation, to wit: that sleep is due to fatigue in the vasoconstrictor center, and that in the early morning hours, when the vasoconstrictor center is regaining its lost tone, variations in blood-pressure result. Brown therefore thinks that morphine and sodium nitrite given between midnight and 2 A.M. may be efficient in preventing hemorrhage.

In an address which the writer of this editorial delivered before the Lehigh Valley Medical Association fourteen years ago, he urged the employment of aconite and chloral in the treatment of these cases, the chloral being particularly of benefit in that it lowers blood-pressure and also acts as a cardiac and nervous sedative. Otis has not employed aconite sufficiently to be able to speak of its power, but he thinks that a laxative dose of sulphate of magnesium in persistent cases is of benefit. We are interested to learn that he has some confidence in the use of ergot, although he knows that he is uttering "a heretical doctrine" in advising it.

CEREBRAL MANIFESTATIONS OF LEAD POISONING.

For a number of years the *Lancet* and *British Medical Journal* have contained reports of cases of acute and subacute poisoning from lead due to the employment of diachylon plaster for the purpose of producing abortion, this method being apparently a popular one amongst the lower classes in England. That lead plaster freely applied is capable of producing such results is rapidly becoming common knowl-

edge, and it will be well if American medical men will bear in mind the fact that certain symptoms due to this cause may mislead them if they are not on the lookout for it.

In a case reported to the *Lancet* of July 13, 1907, Warner describes the case of a woman aged thirty-three years, who received from a friend some diachylon pills with the advice to use six of them a day for several days. This she did, when, after severe exercise, she began to suffer from severe pain in the back and abdomen, to lose blood and finally miscarried. Later the patient was admitted to the London Hospital, having recovered from her miscarriage, but suffering from marked anemia, pain in the back and limbs, with colicky pain in the belly, and fine tremor of the hands. The speech was defective and the memory was deficient. Constipation was marked, and a black line nearly one-fourth inch wide *(sic)* was found on the gums at the base of the teeth. The patient's mental symptoms closely resembled those of delirium tremens. This condition persisted ten days before the mind became clear and natural sleep supplanted that which had been produced by drugs. Under active treatment the dark line on the gums rapidly diminished, and ultimately recovery took place.

The development of symptoms of this character in a patient who gave no history of having taken lead pills might very readily give rise to a grave mistake in diagnosis and in treatment.

THE TUBERCULIN OPHTHALMO-REACTION AS A MEANS OF DIAGNOSIS IN TUBERCULOSIS.

Although the value of tuberculin injections as a diagnostic measure in cases of suspected tuberculosis has been proved frequently, their employment has not as yet become very extensive. The lack of technical simplicity seems to have been an important factor in limiting their use. Any change in technique which brings the tuberculin method within the reach of the general practitioner will therefore be a welcome addition to our diagnostic armamentarium. The recently suggested ophthalmic method of producing the tuberculin reaction seems to give promise of rendering this test generally applicable. In May, 1907, Wolff-Eisner in the *Berliner klinische Wochenschrift,* 1907, vol. xliv, page 700, announced that by dropping a 10-per-cent tuberculin solution into the eye a marked conjunctivitis was produced in tuberculous subjects, while the non-tuberculous did not show this reaction. Shortly afterward Calmette (*Compt. rendus de séances des l'acad. d. sciences,* No. 24, June, 1907) published the results of his experiments with what he designated as the "ophthalmo-reaction." He used a one-per-cent solution of dried tuberculin that had been precipitated by alcohol, and instilled one drop of this solution into one eye. Numerous investigations and several contributions on the subject have followed this, both in France and Germany, and opinions are, on the whole, favorable as to the probable value of the test.

In formulating a theory as to the tuberculin reaction, it has heretofore been assumed that the tubercle bacilli produce, at the foci of infection, certain metabolic products which unite with the receptors of neighboring cells, and render them especially susceptible to the action of the tubercular toxin—*i.e.*, stimulate them to the production of antibodies. After its subcutaneous injection, the tuberculin in the course of its diffusion through the body is supposed to exert a special stimulating action on these cells surrounding the diseased part, and the reaction of these cells produces the febrile disturbance that is characteristic of the test. Now, the local inflammation following the instillation of tuberculin into the conjunctival sac shows that not only the cells surrounding the tubercular foci, but all of the cells of the body, possess in a tuberculous subject the increased power of forming antibodies, and that the introduction of tubercular toxin in any part of the body will produce a local inflammatory reaction.

In eliciting the ophthalmic reaction a one-per-cent solution of old tuberculin, without

carbolic acid, has been usually employed, one drop of this solution being introduced into the conjunctival sac. To avoid excessive reaction, however, it has been more recently suggested that only a half of one-per-cent solution be used. Schenck and Seiffert employ a three-per-cent boric acid solution in making the dilutions. The reaction usually appears within five to ten hours. Its intensity may be one of three degrees: (1) Simple congestion of the palpebral conjunctiva and caruncle; (2) more intense congestion of the palpebral with injection of the bulbar conjunctiva; (3) congestion and swelling of the lids, marked injection of the bulbar conjunctiva, formation of exudate, with the various subjective symptoms of conjunctivitis well marked. The reaction lasts from two to fourteen days, according to its intensity. In very few cases does the inflammation become so pronounced that therapeutic measures for its relief are demanded, but even here the symptoms rapidly disappear under simple applications to the eye. In the experiments of Schenck and Seiffert (*Münchener medicinische Wochenschrift,* 1907, vol. liv, p. 2269) three different strengths were used; if the one-per-cent solution produced no reaction a two-per-cent was tried, and if this also failed a four-per-cent was used. When two or more applications were made, alternate eyes were used, in order to avoid a possible error arising from a cumulative irritating action of the tuberculin, if such exists.

Investigators have usually grouped their cases into three classes: (1) the positively tuberculous; (2) the suspected tuberculous; and (3) the clinically non-tuberculous. In the class of positively tuberculous cases Schenck and Seiffert obtained an ophthalmic reaction in 100 per cent, but only 78 per cent of these responded to the one-per-cent solution of tuberculin, the rest requiring stronger solutions to produce the reaction. Citron's (*Berliner klinische Wochenschrift,* 1907, vol. xliv, No. 33) percentage of positive cases was 80, and Eppenstein's (*Medicinische Klinik,* 1907, No. 36) was 72. Sillig (*Revue Médicale de la Suisse Romande,* 1907, vol. xxvii, p. 887) obtained 89 per cent positive reactions in early stages of tuberculosis, and 100 per cent in second-stage cases. Cohn (*Berliner klinische Wochenschrift,* 1907, vol. xliv, p. 1507) obtained the reaction in only 60 out of 86 cases of tuberculosis. He found that most of the negative cases were among those in far-advanced stages of the disease, some being almost moribund; in fact, about one-half of his advanced cases failed to respond to the test, and the other half gave only a very mild reaction. A few of his patients in earlier stages failed to react to the tuberculin, a fact which suggests a possible prognostic feature of the test. Continued observation of such cases may prove this lack of response to be of unfavorable significance.

Exchaquet (*Revue Médicale de la Suisse Romande,* 1907, vol. xxvii, p. 872) has called attention to another phase of the question—*i.e.,* the value of the ophthalmo-reaction in determining whether or not a case is cured at certain stages in the course of treatment. According to his experience, a patient in whom all symptoms have disappeared should still be regarded with suspicion, if he gives a positive reaction. Marchard (*ibid.,* p. 878) has applied this principle with success to the articular and osseous tubercular affections of children.

In the second class of cases—*i.e.,* those in which tuberculosis is suspected, but not proved clinically—the results of different observers vary considerably, but this variation naturally depends upon the elasticity of the conception of the term "suspected," which gives the observer great latitude in classification. It is noticeable, however, that the cases of this class, which give a positive reaction, are mostly those which offer the greatest clinical evidence of a tuberculous nature. For example, Schenck and Seiffert's positive cases included cervical lymphadenitis, exudative pleurisy, spondylitis, and cases with slight differences between the two apices.

Greater difficulties are encountered in explaining a positive reaction in those cases in which no clinical evidence of possible

tuberculosis can be found. Schenck and Seiffert obtained a reaction to one- and two-per-cent solutions in 14 out of 52 such cases. Four of the positive cases had articular rheumatism—an interesting fact, in view of the association recently claimed by some clinicians as existing between that disease and tuberculosis. In one of the positive cases tuberculosis was finally demonstrated clinically. Marchard (*ibid.*, p. 878) had only one positive reaction in nine cases of this class. Bourget (*ibid.*, p. 887) obtained the reaction in 31 out of 50 cases which were clinically negative. Two of these positive reactions occurred in typhoid fever and hemiplegia respectively, and at autopsy no trace of a tubercular lesion could be found.

A peculiar susceptibility to the ophthalmo-reaction in typhoid fever has been demonstrated by Cohn, who obtained the reaction in eight out of twelve enteric cases. In the course of typhoid fever bacteriolysis of large numbers of bacilli occurs, and a specific sensitiveness is developed toward typhoid bacillus extracts. It may be that this sensitiveness embraces all bacterial proteids, including tuberculin. This is a question that requires further investigation. In fact, all of the experiments are so recent that the value of the ophthalmo-reaction can be definitely decided only by watching the further progress of the cases already observed, and comparing autopsy findings with the results of the test during life.

A comparison of the ophthalmo-reaction with Koch's method of subcutaneous tubercular injections, made by Cohn in a series of doubtful cases, was quite favorable to the former. In only three cases did the subcutaneous method prove more sensitive than the ophthalmic instillation.

In conclusion mention may be made of experiments performed by Combe (*ibid.*, p. 888) in children. He found that the age of the child materially influenced the occurrence of the tuberculin ophthalmo-reaction. Below one year no reaction was obtained, either in tuberculous or non-tuberculous patients. In the second year the reaction was very uncertain in its results, but beyond that age the results were similar to those obtained in adults. No explanation is given for this peculiarity in the behavior of the test.

NERVE SUTURE FOR BRACHIAL PALSY.

A common form of brachial palsy is the so-called Erb's combined paralysis of the shoulder and arm, which involves the deltoid, biceps, brachialis, supinator longus, at times the supinator brevis, the infraspinatus, and the subscapularis. It is generally an expression of trauma incident to pressure of the clavicle, such as results from traction on the arm raised above the head and carried backward, as in the case of the prolonged Trendelenburg position. This form of palsy is a not uncommon expression of a difficult delivery, especially when there has been a breech presentation. Such a palsy is usually unilateral, and the prognosis is not always bad, since the nerve lesion may be simply incident to overstretching, from which recovery may be complete. Where there has been an absolute tear of nerve fibers the outlook for restoration of function is less promising. The extent of the lesion and the powers of restoration can, however, only be determined by the lapse of time. It has been clearly shown that the restoration of muscular power is greatly aided by preventing the useless muscles from being held in a position of tension by the contraction of the antagonistic uninjured muscles. Hence in all such cases splinting is indicated, which will hold the affected muscles in a position of moderate relaxation.

When this treatment, combined with massage, passive motion, and electricity, has proven unavailing after months of fair trial, the only treatment which gives the faintest promise of help is that by operation; having for its end the exposure of the involved nerve trunks, the excision of scar tissue, and the direct union by suture of the comparatively healthy nerve segments.

This procedure, although theoretically promising, is not invariably followed by success, sometimes because there has been difficulty in locating the seat of original injury, often because the latter has been intraspinal. A successful issue of such an operation is therefore worthy of attentive consideration, since it encourages surgeons to at least make a timely effort to prevent what would otherwise result in permanent crippling.

Kilvington *(Intercolonial Medical Journal of Australasia,* vol. xii, No. 8) records the case of a boy six years old, delivered with extreme difficulty head first, immediately after birth exhibiting almost complete brachial palsy, which gradually improved to some extent. When seen by the surgeon the arm involved was much smaller than its fellow, the deltoid, the biceps, and dorsals of the scapula being the muscles particularly affected. The supinators of the forearm were also involved, and the hand was held permanently in the prone position, owing to the contraction of the unaffected pronator muscles. Marked disability was produced by inward rotation of the arm at the shoulder-joint because of paralysis of the external rotators.

Kilvington turned up a flap from the subclavian triangle and found the deep fascia thickened and adherent to the subjacent nerve cords. A distinct bulbous scar was observed in the upper part of the brachial plexus, adherent behind and below to the subclavian artery. As healthy substance could be reached on either side of this, a wedge-shaped piece, going well wide of the scar, was excised. Two thin chromicized catgut sutures brought the cut ends of the plexus together without any difficulty when the arm was raised and approximated to the side. A small, flabby nerve which on stimulation with electrodes caused outward rotation of the humerus was very carefully brought by a separate suture in contact with the freshened central end of the plexus. This was undoubtedly the suprascapular nerve. The dressing was that usually applied to fracture of the clavicle. Massage and passive movement constituted the after-treatment.

Five months after operation the arm could be raised vertically above the head, the power of the dorsal scapular muscles seemed completely restored, there was no tendency to inward rotation, and almost complete supination was possible. When the patient first began to use the arm there was some incoördination which required a reëducation of the centers.

In regard to the time for operation, Kilvington urgently protests against the prolonged use of postural treatment, having for its end the relaxation of the paralyzed muscles. This he believes has its greatest value after operation.

If in the case of birth palsy recovery occurs after two or three months of conservative treatment it is quite certain that the lesion was a stretching or bruising of nerve fibers. If after this period of time there is no betterment the sooner nerve suture is performed the better, Kilvington holding that it is as reasonable to expect nerve fibers to regenerate through a dense mass of scar tissues by relaxing certain muscles as it is to cause them to do so by standing the child on its head.

CANCER OF THE THYROID GLAND.

Stimulated thereto by the admirable results achieved by Koch, surgeons the world over no longer hesitate to remove thyroid tumors, even when no symptoms other than those incident to deformity are present; still less do they hesitate when patients exhibit either pressure symptoms from the growth of the tumor or the manifestation of systemic intoxication.

In all clinics the results of operation for benign, solid, or cystic growths are most satisfactory, and even in exophthalmos operative procedure promises more than any method of treatment yet suggested, though it unfortunately remains true that the subjects thus afflicted are rarely passed to the surgeon until they have reached their final and fatal stage, the high mortality

then being incident to cardiac degeneration rather than directly to the effect of operation.

The results of the operative treatment for malignant growths of the thyroid show, however, but little improvement in so far as ultimate results are concerned over those of ten or twenty years ago.

It is generally recognized that malignant degeneration usually occurs in thyroids subject to benign struma in the female, and develops between the fortieth and fiftieth year, though it has been observed both in the infant and the aged.

A. E. Halsted *(Surgery, Gynecology, and Obstetrics,* November, 1907) notes that the tumor is usually an alveolar carcinoma which may microscopically be recognized by its grayish-white cut surface and its dry, non-vascular tissue. The adenocarcinoma is found in two forms: in one possessing a low degree of malignancy, the tumor grows in alveolar or tubular processes, the lumen of the tubes being lined with cylindrical epithelial cells, which secrete normal colloid material; the tubular processes often form papillary outshoots and undergo cystic changes. The other exhibits no tendency to papillary or cyst formation and closely simulates benign adenomas and hyperplasia of the normal gland. Even careful histological examination frequently fails to determine the malignancy of any individual specimen. The absence of the tunica propria and invasion of the surrounding structures, and particularly growth into a vein, are evidences of malignancy.

Halsted notes that the suspicion of malignancy should exist in every case when a goitre that has remained stationary in growth for some time suddenly begins to increase in size. If this occurs in a patient over forty and is associated with pain, dyspnea, or dysphagia, or if the growth becomes hard and nodular, the evidence is almost conclusive that a malignant change in the hitherto benign growth has occurred. Paresis or paralysis of the recurrent laryngeal nerve is sometimes observed as an early symptom.

Metastases into the cervical lymphatic glands, a usual late complication, are sometimes observed early. They form hard, painful, rapidly growing tumors, and are pathognomonic of cancer. Thrombosis of the veins is a constant and valuable sign; indeed, this at times early suggests the diagnosis. Hahn determined the malignant nature of a goitre by the examination of a portion of a thrombosed cutaneous vein excised under local anesthesia. Halsted notes that when thrombosis of the deeper veins is present, metastasis through the vascular system has already occurred, and the disease is no longer amenable to surgical treatment. It often happens that the diagnosis of cancer can only be made after a miscroscopic examination of a goitre supposed to be benign. The expectation of life after diagnosis is given as a year and a half. Whilst the growth remains intracapsular it cannot be distinguished from benign goitre by any means of examination other than that of excision and examination. Metastases are commoner in the lungs than in the bones. The glands involved are those above the internal jugular and along the clavicle; later the internal mediastinal glands become infiltrated. Bone metastasis may occur when the carcinoma of the thyroid is still so small as to escape detection. The secondary bone tumors often exhibit pulsation.

Halsted's paper accentuates the need of early operation in practically all cases of goitre. It offers no promise of any betterment in ultimate mortality from operative interference in cases so well developed that a preoperative diagnosis can be made with certainty. It suggests the hope that cancer of the thyroid may become extremely rare with a general adoption of the principle of easy operation upon all thyroid enlargements, since malignant growth is little inclined to develop primarily in a previously healthy gland.

REPORTS ON THERAPEUTIC PROGRESS.

VALVULAR DISEASE OF THE HEART.

In the *Practitioner* for June, 1907, CRAWFURD tells us that in the direct treatment of tricuspid regurgitation we have, as in mitral regurgitation, two main lines of action, viz., to diminish the resistance in the vessels and to increase the power of the heart. Rest is the first and most essential agent, and alone will often suffice to restore equilibrium; rest should at first be complete and in bed, and should be relaxed only as improvement becomes marked. The most valuable auxiliary of rest is digitalis, which beyond all question acts as powerfully on the right ventricle as on the left. In grave cases it should be given with the usual precautions, viz., after a free initial purge to unload the veins, and combined with more rapidly-acting stimulants, such as strychnine, ammonia, or ether, to tide over the delay of its effective doses. Calomel is probably the best purgative to employ, as it seems to be diuretic in conditions of cardiac back-pressure. Digitalis should be given at first in small and gradually increasing doses, so as to give the pulmonary circulation time to readjust itself to the increased driving power of the right ventricle; not a few instances of hemoptysis have resulted from disregard of this condition. It is remarkable, as a rule, how, with rest and digitalis, in a few days the circulation is steadied, free diuresis set up, and dropsy begins to disappear. At the same time the murmur and systolic venous pulse may vanish. At times diuresis fails, or is inadequate; then theobromine or caffeine may be given with salicylate of soda. When the whole body, and perhaps the serous sacs as well, is dropsical, these measures are all apt to be quite ineffectual, until such effusion has been relieved or removed; then paracentesis of the abdomen or thorax, or puncture or incision of the feet and legs, may be a necessary prelude to the success of digitalis. Such relief is usually followed by a rapid increase in the output of the urine, and by a return of restful and comfortable sleep.

There are yet other cases, commonly those in which dropsy is not a prominent feature, and in which the strain on the right heart is so great as to render the patient livid and on the verge of suffocation; then early venesection, followed by diffusible stimulants, such as ammonia and ether, offers the best chance. Acute distress of this kind in tricuspid regurgitation is nearly always attended by two dangerous auxiliaries, sleeplessness and vomiting, directly due, in each case, to venous stagnation. Sleep must be obtained, and at times at any price. The author states he has seen the end, in one or two cases, accelerated by morphine, but far more often by the fear of morphine. He is sure that in conditions of urgent cardiac distress, with restlessness and insomnia, we are far too fearful of morphine, and patients are allowed to die of sheer exhaustion for want of sleep. It is the author's idea that it may be given most safely in the form of suppository, but if given subcutaneously it may be advantageously combined with strychnine. It is useless to give morphine, if we have not the courage to give an efficient dose. It is idle, in advanced cardiac cases, to put one's trust in hypnotics other than morphine; the habitual sequel is a night of disturbed delirium, followed by a day of tantalizing drowsiness. Trional, sulphonal, and paraldehyde are most commonly employed, because, forsooth! they do not depress the heart. Paraldehyde has the added horror of a clinging and nauseous after-taste, and may excite persistent vomiting.

Vomiting is another grave danger, and is directly due to venous stagnation in the stomach. At times even the smallest amount of fluid food is at once rejected. In such a state it is worse than useless to attempt feeding by the stomach. The obvious indication is, without delay, to unload the

portal circulation. Any bulky saline draught will be immediately rejected by the stomach, and a full dose of calomel, with an equal quantity of bicarbonate of soda, mixed in a dessertspoonful of milk, is most likely to be retained; this will often prepare the stomach to tolerate small amounts of peptonized milk. Rectal feeding is probably useless, as the condition calls for urgent and immediate relief.

It is in this same class of cases, in which general anasarca is not a prominent feature, that the enlarged liver is apt to cause a great deal of discomfort and even pain. Free leeching over the liver, with a brisk purge, may afford some measure of relief.

LOCAL ANESTHESIA IN THE EXTRACTION OF TEETH.

The correspondence which appeared recently in the *British Medical Journal* on the subject of the use of cocaine in the extraction of teeth will serve a useful purpose if it directs the attention of the profession to this subject, the importance of which is not sufficiently realized. At present the very phrase "painless extraction" is little more than a byword, and a large proportion both of the public and the profession have the idea that dentists who use cocaine before extraction use it merely as a placebo, as something to give confidence to the patient, and assuage his terror before inflicting the inevitable torture. There are those, in fact, who place the method of local anesthesia on a level with the brass band which drowned the shrieks of the victims of the "painless dentistry" of the operator at a fair. It follows that we rely almost entirely on general anesthesia, nitrous oxide being administered in the vast majority of cases. It is admitted that this anesthetic is both safe and convenient, but its duration is too short for the extraction of more than a few teeth, especially when there is any difficulty attending the operation. It is under these circumstances that the medical man is called in, and is presented with the choice between chloroform, which is notoriously dangerous in dental work, and ether, whose inconveniences are apt to appear out of proportion to the comparative triviality of the operation.

It is impossible to read Dr. Sauvez's book, "L'Anesthesie Locale pour l'extraction des Dents," without coming to the conclusion that much of the skepticism which exists in this country as to the anesthetic value of cocaine in tooth extraction is due to a haphazard and in fact faulty method of applying it. After a very careful analysis of the advantages and disadvantages, the dangers and comparative efficacy of the two methods, Dr. Sauvez declares definitely in favor of local anesthesia in all but a few exceptional cases; and of the various methods of producing local anesthesia, injection of the gum with cocaine is almost always the best, though he thinks it likely that cocaine will be largely superseded by the newer drug, stovaine, owing to the slighter toxicity of the latter body.

It is sometimes argued that cocainization cannot abolish the pain of extraction, because while anesthetizing the gum it leaves untouched the nerve which supplies the tooth itself, and it is assumed that the drag on this nerve and its final rupture is a principal cause of the pain. This last assumption is altogether denied by Dr. Sauvez, and he claims to have disproved it in an earlier work. In support of his contention he quotes the following significant fact, namely, that where the pulp of the tooth is exposed and the gum is properly anesthetized, the touch of a probe on the pulp still produces intense pain, but extraction of the tooth is nevertheless perfectly painless. This fact, which Dr. Sauvez claims to have amply verified, would seem sufficient of itself to prove his contention that the real cause of the pain is the rupture of the "alveolo-dental ligament." Dr. Sauvez's account of the fibrous and membranous relations of the tooth is not perfectly clear, but what he describes as a ligament evidently consists of certain fibers from the membrane familiar to English readers as the periodontium. But even if we regard his differentiation of these fibers as somewhat fanciful, his argument is not thereby affected. "The object of local anesthesia for the extraction of teeth," he

says, "is solely anesthesia of the alveolo-dental ligament." The important point of the book is Dr. Sauvez's account of the technique by which he achieves this object, and that account is admirably clear and convincing. If for "alveolo-dental ligament" we choose to substitute "periodontium," it makes no difference. To achieve the above object the needle should be entered obliquely at a point midway between the free border of the gum and the level at which the point of the fang is assumed to lie, or, according to Loup, slightly nearer the neck of the tooth.

It is of the utmost importance that the point of the needle should not penetrate quite through the mucous membrane, or, as Dr. Sauvez says, the injection should be "intradermic" rather than "hypodermic." The point of the needle is carefully advanced as the fluid is very slowly pressed out. If the needle has been entered aright there will be considerable resistance to the expression of the fluid, and the injection will be followed by blanching of the gum. If there is no resistance it is because the needle has penetrated into the loose submucous tissue, or is too close to the epithelium, which it raises in a bulla. In either of these cases the anesthesia will be unsatisfactory. The aim of the operator should be to surround the tooth with a zone of anesthesia, and for this purpose at least two punctures are necessary. When there are no other teeth in contact with the one to be extracted four punctures may be made with advantage. If the fluid is expressed slowly enough anesthesia will be established as soon as the last injection is complete. In all ordinary cases 1/6 of a grain of cocaine hydrochlorate dissolved in 15 minims of water (that is, one per cent approximately) will be sufficient, but in more difficult cases Dr. Sauvez has used as much as 1/2 of a grain without mishap, and in these cases it is most important that the recumbent position should be maintained both during and after the operation. In order to overcome the resistance which ought to be met with it is important that the syringe should have a wide thumb-piece on the end of the piston, and two wings attached to the barrel to afford a purchase for the first and second fingers; the needles should be screwed on to the syringe with a rubber washer to prevent any escape of fluid at the joint. The best results are obtained with the one-per-cent solution of cocaine combined with five per cent of adrenalin chloride; and Dr. Sauvez also speaks highly of stovaine, which is less toxic than cocaine. But the danger of syncope and other accidents arising from the use of cocaine he shows to be due in most cases to ignorance or carelessness in the method of administering it; and he emphasizes the fact that the same amount of the drug is more dangerous in a concentrated solution than in a weaker one.—*British Medical Journal*, April 13, 1907.

BUTTERMILK FEEDING.

To the *Journal of the American Medical Association* of May 11, 1907, CARPENTER contributes a paper on this topic. The twelve infants reported upon varied in age from one month to fifteen months. The average gain in weight of the five babies treated in the Philadelphia Hospital was 7½ ounces a week. The average gain in weight of the seven babies treated at the dispensary was 8¾ ounces a week.

The average gain in weight of the entire twelve infants fed on buttermilk was 8 ounces a week.

This gain in weight is particularly of interest for the reason that every one of these twelve cases was seriously ill at the time it was put on buttermilk. The author calls special attention to the five babies in an infant asylum, whose average gain was 7½ ounces a week.

Carpenter concludes that one advantage of buttermilk in dispensary practice is its inexpensiveness, costing in Philadelphia only 5 cents a quart.

The author believes fresh buttermilk a most excellent temporary food for infants suffering from intestinal indigestion, enteritis, and marasmus.

He has observed no unpleasant effects

from the administration of fresh buttermilk; infants almost invariably take it well.

A few of these infants, when first put on buttermilk, vomited slightly; but in every case this ceased in a day or two, with one exception.

Finally, the point the author wishes to emphasize from his brief experience is, whatever success has attended the use of buttermilk is not so much due to the absence of fat as to the great ease with which the proteid of buttermilk is digested. He has had the opportunity to observe this in almost every one of his cases. Several who were unable to digest 0.75 per cent of calcium casein digested perfectly the 2 to 3 per cent of casein lactate in the buttermilk.

INDICATIONS FOR THE EMPLOYMENT OF ADRENALIN CHLORIDE IN CONJUNCTION WITH COCAINE, IN OPERATIONS ON THE EYE.

THEOBALD in the *Journal of the American Medical Association* of July 27, 1907, states that for several years, as a matter of routine, he has been employing adrenalin chloride in conjunction with cocaine in many operations on the eye. At first this was done solely to lessen hemorrhage, but for some time he has used it not only for this purpose, but because it soon became evident that through its action the anesthetic effect of the cocaine was definitely increased.

In operations on the cornea and conjunctiva the anesthesia produced by cocaine is, as a rule, so complete as to leave little to be desired, but this cannot be said of certain other operations, notably those on the ocular muscles, on the lacrimal apparatus, and those done for the cure of chalazion or other tarsal cysts. Here, where much is to be desired in the direction of more perfect anesthesia, adrenalin has proved of undoubted value.

That adrenalin used in conjunction with cocaine facilitates, in a mechanical sense, the passage of probes through the occluded lacrimal duct has not been evident to the author, but that it renders the introduction of the probes, as well as the slitting of the canaliculus, less painful is hardly open to question. There can be as little question that chalazion operations in like manner are made much more tolerable than are those in which cocaine only is used.

In tenotomies of the ocular muscles the hemostatic action of adrenalin is of great advantage, though it must be confessed that it does not always as effectually control hemorrhage from the divided tendon as it does from the conjunctival incision. In addition to this effect, however, the writer is sure that it makes the operation—especially the cutting of the tendon and the manipulations with the strabismus hook—decidedly less of a tax upon the fortitude of the patient.

In operations involving the making of a corneal section, especially cataract extractions and iridectomies, with the exception of iridectomy done during an attack of inflammatory glaucoma, the experience of the author has taught him to be rather chary in using adrenalin. For, though he has employed it several times in cataract extraction with no ill effect, he has felt more than once that the operation was complicated by its use. Particularly was this true of one case in which, immediately after the completion of the section, the cornea lost its transparency to a remarkable degree and collapsed in crater-like fashion, the further steps of the operation thereby being rendered decidedly more difficult. In such operations, too, there seem to be no definite reasons for employing adrenalin, since the anesthesia from cocaine alone is usually satisfactory. This last observation does not apply, however, to iridectomies performed for the control of inflammatory glaucoma. Here, as is well known, the anesthesia from cocaine is often far from satisfactory. For this reason, and because, moreover, the astringent effect of adrenalin is decidedly helpful, the author has preferred to use it under such circumstances. It is interesting to note that Professor Fuchs, of Vienna, has been led by his experience to a similar conclusion.

In operations for pterygium, adrenalin

seems to the author to be contraindicated, because its blanching effect renders the outlines of the growth difficult of recognition, and, besides, the anesthesia from cocaine alone is all that could be wished for.

Dr. J. Elliott Colburn has pointed out another valuable indication for the use of adrenalin in conjunction with cocaine. In several cases of ocular traumatism the instillation of adrenalin by checking hemorrhage greatly facilitated the detection and removal of foreign bodies which were embedded in the superficial structures of the eye.

Although the author has usually employed adrenalin in full strength (1:1000 solution), and, especially in probing the lacrimal duct, has applied it to the same eye repeatedly and freely, he has never seen any untoward consequences, except such as he has referred to, from its action. He has also found that its sterilization, by brief boiling in a Florence flask, in nowise impairs its efficiency.

There seems to be good authority for the claim that the toxicity of cocaine is markedly lessened through the action of adrenalin, but in eye surgery this is not a matter with which we are much concerned.

THE ACTION OF THE EXTRACT OF THE SUPRARENAL GLAND AND THE METHOD AND INDICATIONS FOR ITS USE.

In the *Journal of the American Medical Association* of May 18, 1907, MILLER considers the value of this drug in hemorrhage from vessels not accessible to local applications, as in the lung or intestinal tract. Adrenalin may check hemorrhage not only through its constrictive action but also by increasing the coagulability of the blood. The latter action can be readily demonstrated after intravenous injection. At first thought it would appear that we have here an ideal hemostatic. Its constrictive action, however, is more than counterbalanced by the sudden increase in pressure. In rabbits the author observed that in a wound the vessels that have stopped oozing often start bleeding after an intravenous injection of adrenalin. It is also not an infrequent occurrence to have a cannula forced out of the carotid immediately following the use of an intravenous injection. In pulmonary hemorrhage there is the additional danger of possible absence of vasoconstriction by having a condition of dilated vessel with increased pressure. Its action in stopping hemorrhage by increasing the coagulability of the blood may be more safely and effectually induced by calcium chloride or gelatin, neither of which increases blood-pressure. The use of adrenalin in controlling distant hemorrhage should be discouraged, as it probably does harm, as may any substance that increases blood-pressure. This has led Smith, Hare, Lemoyez, and others to advocate vasodilators in controlling distant hemorrhage.

The use of adrenalin by subcutaneous injection in controlling asthmatic attacks is of recent date, although applied to the nasal mucous membrane it has been employed for this purpose for several years. Kaplan has reported very favorably of its action in relieving the asthmatic attack. The dosage is from 5 to 15 minims of the 1:1000 solution subcutaneously or intravenously. During the past year the author has used adrenalin in eight cases of bronchial asthma with very satisfactory results. In all these cases marked relief appeared in two or three minutes and continued for three hours. Some of these cases were of long standing and the patients had employed all the ordinary remedies, but according to their statements none afforded such prompt and complete relief as adrenalin. From tests with other substances he is quite convinced that the results are due to the specific effect of the drug and not to any suggestive action. In none of his cases could he observe any curative effect; the attack occurred at the usual interval and with the same intensity. One patient during a period of eight months received 100 injections, always with relief, no increase in the dose being necessary. In none of the cases could he observe any untoward results. J. A. Capps, however, in personal communications, reports serious cardiac disturbance in an elderly person

immediately after an injection for asthma, and its use here should be restricted to patients with good heart and blood-vessels. The action of this drug on asthma may throw some light on the nature of the pathological process. It is difficult to conceive how adrenalin can relieve a bronchial spasm; one can more readily see how a hyperemia of the bronchial membrane could disappear under its vasoconstrictor action.

THE HYPODERMIC USE OF QUININE.

In an article on this subject in the *Indian Medical Gazette* for May, 1907, SYMONS fully indorses the efficiency of administering quinine "with the needle." Since his connection with the General Hospital at Madras, as fourth physician, some four years since, he has always given quinine by this method, and has only seen one bad result, in the shape of a superficial abscess. The salt used is the acid hydrochloride of quinine, which will dissolve in equal parts of distilled water. This solution is made up in the dispensary of the hospital, in an ounce bottle, and used when required.

The technique is as follows:

1. A small hypodermic syringe is used, the needle of which is sterilized by boiling for two to three minutes in a test-tube. The syringe is washed out with 1-in-20 carbolic lotion by means of drawing up some of the solution into the syringe three or four times. A small spoon is also placed in the 1-in-20 carbolic lotion, and is used to receive the quinine lotion when it is poured out from the bottle previous to changing the syringe. The glass stopper together with the neck and mouth of the bottle are thoroughly cleaned with a sponge dipped in 1 in 20, and the parts into which the solution is to be injected is, of course, prepared in the usual way. The author considers all the above details absolutely essential, especially the cleansing of the bottle—a point likely to be forgotten.

The dose is 10 minims, equal to 10 grains of the salt, intramuscularly in the deltoid muscle. If it be given hypodermically, trouble in the shape of a superficial abscess may arise—never, however, when introduced into the muscle. As to tetanus, such a disease should never deter one from intramuscular injections if the above precautions are taken. The author asserts he has been injected in the deltoid on many occasions about 10 A.M., and has played polo the same evening, which speaks for itself as regards local after-effects.

Sometimes a slight aching sensation occurs whilst the solution is being injected, but it passes off immediately.

In the author's opinion there is no comparison in the two methods—*i.e.*, by injection and mouth. By the former method we make absolutely sure of the patient receiving the dose of quinine which is administered, and we do not derange the digestive organs. The patient comes quickly under the influence of the drug—a very important factor in "malignant" cases. The temperature comes to normal in twenty-four to thirty hours and stays there. In his wards the usual practice is to inject on three successive days and then on alternate days for the week to make sure of the patient being quininized.

The author has never observed symptoms of cinchonism from this method. He adds that all the cases are diagnosed by the finding of the plasmodium malariæ before the quinine is given, even if it means the patient remaining a few days in the wards before he receives any specific treatment.

TREATMENT OF THE ANEMIAS.

G. SITTMANN (*Deutsche medicinische Wochenschrift*, Dec. 27, 1906) deals with the manifestations of the various forms of anemia and with the best forms of treatment. All anemic conditions have one factor in common—that is, a diminution of the total quantity of blood. This is most marked in acute and chronic posthemorrhage anemia. In this form, and also in progressive pernicious forms, it is necessary to make good this diminution in quantity. Transfusion of foreign blood (that is, animal) has long been discarded, since the dangers attendant are very great. Trans-

fusion of human blood does not offer any great difficulty or danger if one succeeds in carrying it out properly and in preventing coagulation. Ziemssen's method is to extract blood from the vein of a healthy person into a sterile syringe having a capacity of 25 cubic centimeters, and slowly injecting it into an arm vein of the anemic person. The syringe is then washed out with sterile warm saline fluid, and the process is repeated. The needle is connected to the syringe by means of a short rubber tube, so that there is room for movement of the needle on the syringe and less chance of wounding the inside of the vein. Three syringes are required: one is being cleaned out while the second is being filled and the third is being emptied. This method has yielded good results in oligemia after acute bleeding, in anemia after prolonged chronic bleeding, but in chlorosis and pernicious anemia it is of less avail, and it is quite useless in leukemia.

The injection of defibrinated human blood is too dangerous to be employed. Next, one can inject sterile physiological saline fluid subcutaneously. This method not only increases the amount of circulating fluid, but inasmuch as it washes out of the hematopoietic organs the reserve stock of red blood cells it supplies a certain increase of the oxygen carriers. One can get from 1½ to 2 liters of fluid to be taken up in an hour by applying a large glass irrigator and allowing the fluid to run in continuously, while massage is applied to the site of injection.

With regard to the replacing of the lost hemoglobin he finds that iron in some form is the sovereign remedy. In all the diseases of the blood attended with diminution of the amount of hemoglobin iron should be employed. After hemorrhage the total quantity of hemoglobin is diminished; in chlorosis the quantity of hemoglobin is more diminished than is represented by the decrease in the number of red cells; while in pernicious anemia the loss is less as far as hemoglobin is concerned than as far as cells are concerned. In leukemia the hemoglobin diminution corresponds to the diminution in the number of red cells. Only in the cachectic stages of pernicious anemia does iron do harm. Iron therapy is of greatest value in diseases which depend most on the diminution of hemoglobin, and it is therefore most useful in chlorosis. It is of less value in secondary anemia or in essential anemia.

With regard to the form of iron the author states that much difference of opinion exists as to the best combinations. It has been shown that both organic and inorganic combinations of iron are absorbed from the intestines. Sittmann considers that all the elaborate organic preparations of iron are unnecessary, and that excellent results are obtained by means of the old-fashioned Blaud pills or the solution of the albuminate of iron. It is, however, of great importance to give iron in such a form and way that the digestion is not disturbed, and that the nutrition is not interfered with during medication. He believes that the iron is less responsible for gastric symptoms than is the alcoholic content of many of the preparations. He does not approve of increasing doses of pills or other forms of iron, but gives large doses from the first, and has never seen them do any harm.

Arsenic has a distinct influence on the blood-forming organs. It is said to act by stimulating these organs, and thus indirectly producing a larger manufacture of blood cells. Fowler's solution, either combined with iron or without, is of use in the pernicious form. It is too painful to be employed in subcutaneous injections, but the sodium arsenate can be given in this way. For prolonged medication subcutaneous injections are to be preferred. Sodium cacodylate may be given by mouth or hypodermically, and arsenic-containing mineral waters also offer a means of employing this element.

After saying a few words on the *x*-ray treatment of leukemia, which he thinks does considerable good, although it cannot be said to cure the disease, the author passes on to the dietetic and nursing treatment of anemias. Overfeeding, or at least very plentiful feeding with easily assimilated

forms of food, does much good. The best results are obtained when one can keep the patient in bed, but this is often very difficult to carry out. The hemoglobin amount improves steadily as long as the person is lying, and he should not be allowed to get up until the blood has shown a very marked improvement. Alcohol should be avoided in all forms of anemia, while coffee and tea should only be given in small quantities as taste correctives.—*British Medical Journal*, April 13, 1907.

BREAKFAST FOODS.

Prof. Robert Harcourt has contributed to the *Journal of the Society of Chemical Industry* of March 30 a valuable paper on the chemical composition, digestibility, and cost of several wheaten and oaten products that have been placed on the market under the names "breakfast cereals" and "breakfast foods." According to the claims made for some of these foods they are not only perfect foods in a condensed form, but they are also brain tonics and possess a variety of wonderful virtues. Professor Harcourt ruthlessly looks below the surface of mere newspaper "puffs" and shows by a series of analyses how little these extravagant claims find justification in fact. The various breakfast foods may be roughly divided into four classes: (1) The old forms of uncooked granulated oatmeal and the wheat farinas. Foods of this class are served after cooking either for a short time or for several hours. (2) Partially cooked rolled and flaked grains. In manufacturing these foods the grain is softened by steaming and then rolled and dried. In this way the food is slightly cooked and may be subsequently prepared for the table in a very short time. (3) Cooked foods—*e.g.*, shredded wheat, which may be served at once without further cooking. (4) Malted foods—*e.g.*, Force and Grape Nuts, which are supposed to be both cooked and partially digested.

Professor Harcourt examined the following breakfast foods: Granulated and rolled oats, Quaker Oats, wheat farina, wheat germ, and rolled wheat, flaked barley, cornmeal, Orange Meat, Force, Norka, Malta Vita, Grape Nuts, Canada Flakes, shredded wheat, and rice flakes. Of these, the oatmeals and Norka, an oaten product, contain the most proteins and fat, while all the other foods are richer in carbohydrates. From a consideration of the data set forth in the paper and of the number of heat calories these foods produce when burned, the conclusion is drawn that the oaten products have the highest nutritive value.

The much-advertised prepared breakfast foods have only a very slight advantage over the ordinary wheaten farinas. Experiments were made to determine the digestibility of these different foods by ascertaining the quantity of protein, fat, and carbohydrates in the food eaten and in the feces, the differences being regarded as the amount digested. Healthy young men were taken as subjects, and each experiment extended over a period of four days. According to these results the wheat germ is more fully digested and absorbed than any of the other foods. The protein of all the foods examined is less completely assimilated than the other constituents. This is particularly true in the case of Force. It is also noteworthy that the carbohydrates of Orange Meat, Force, and Norka are not so fully assimilated as those of the other foods. The results, as a whole, indicate that the expensive prepared breakfast foods are not more completely digested and assimilated than the wheaten farinas and rolled oats, or even than the old forms of granulated oatmeal.

Calculations were then made as to the food value of the digestible matter obtained from a given money value of each of the foods examined. It was found that cornmeal is the most economical of these foods, the oatmeals take second place, and the wheat germ occupies the third place. Oatmeal and wheaten farina in packages are twice as expensive as in bulk. The predigested foods are very much more expensive; thus, Force costs more than four times as much as granulated oats.

Experiments were made to determine the influence of cooking on the solubility of

these various foods. Rolled oats and wheaten farina were cooked for different lengths of time, when it was found that the wheatmeals are more readily rendered soluble by heat than the oatmeals. Thus, after twenty minutes' boiling the aqueous extract of wheaten farinas contained 27.4 per cent of soluble matter, while the extract of the oatmeals contained only 14.95 per cent. Rolled oats and wheaten farina were then boiled for different lengths of time, from twenty minutes to eight hours, and the products were eaten by different subjects in order to determine the digestibility of the foods so treated. The results showed that the length of time during which the food is cooked does not very materially influence the percentage amount assimilated. It is possible that less energy may have been expended in digesting the foods that were cooked for the longer times, but no figures could be procured on this point.

From all the data presented it is evident that corn-meal, rolled oats, and the farinas, especially if bought in bulk, are the most economical breakfast foods. It is, however, true that these foods do not agree with every one, and that the predigested foods may be useful for those people who have difficulty in digesting starch. But the intelligent housewife who needs to consider economy will do well to continue to use the old form of breakfast foods, except in individual cases in which the difficulty is found in digesting them.—*Lancet*, May 4, 1907.

HOME TREATMENT OF EARLY TUBERCULOSIS.

KEATING states in the *Medical Record* of July 20, 1907, that as the successful treatment of pulmonary tuberculosis depends upon the observance of certain rules of living that are apt to be in such marked variance with the daily habits of most of the patients, the difficulty of effecting a cure is apparent.

The progress of the disease being slow and the disability in even rather well-advanced cases not being pronounced, the patients are unable to appreciate the necessity of instituting prompt and effective measures for their relief.

The frequent relapses, the months and sometimes years of patient effort required to establish freedom from objective and subjective symptoms, are discouraging to both patient and physician. All patients suffering from pulmonary tuberculosis should begin treatment by rest in bed, for at least six weeks. This initial rest should be taken under conditions that are as near an approach to out-of-doors as it is possible to obtain.

The family as well as the patient should understand that the six weeks' rest will not cure the disease; that its object is to check its progress and give the patient an impetus toward recovery.

It should be made clear that the road to recovery is not likely to be an uninterrupted one, but that occasional periods of one or two weeks in bed are to be expected. If constipation exists it should be relieved at once. Magnesium sulphate in daily teaspoonful doses acts very nicely, and may be continued for two or three weeks. If the patient suffers from nausea or vomiting, relief is most quickly obtained by administering a high enema, consisting of glycerin half an ounce, magnesium sulphate half to one ounce, water one quart.

It is surprising to see how promptly nausea, vomiting, and gastric pains disappear under a liberal diet, when the patient is put to bed, and free movement of the bowels is established. For continuous use, when a laxative is needed, fluid extract of cascara sagrada, in five- to ten-minim doses three times a day, is one of the best and most satisfactory drugs.

For the associated bronchitis, guaiacol carbonate, in five-grain doses four times a day, is of value. The author has seen some patients improve nicely who received ichthyol in thirty-grain doses three times a day, while in other cases it has seemed to have no effect.

The two drugs that have given him the best results in all cases are arsenic and tincture of nux vomica. They may be given singly or combined: arsenic in the form of

Fowler's solution in three-drop doses, and tincture of nux vomica in five-drop doses at meal-time.

While he believes that serum therapy, combined with better hygienic conditions, will in the future be to tuberculosis what vaccination is to smallpox, he feels that with the present knowledge of tuberculin it would be better to confine its use to sanatoriums, where the risk of its administration can be reduced to a minimum, and the reaction carefully observed.

However, as many competent men are using it in general practice and believe in its value, he does not think its use should be entirely condemned or thought unsafe in the hands of the general practitioner. In the matter of feeding it should be kept prominently in mind that, with the patient in bed, the stomach will care for an amount of food which, if taken with the patient going about, would prove disastrous. The diet should consist of three liberal, properly prepared meals a day. In addition the patient should drink one to two quarts of mixed milk and cream, and take from three to a dozen raw eggs during the twenty-four hours. The patient should be instructed to drink the milk slowly. Three or four drachms of lime-water may be added to the daily supply.

Sleep can often be obtained for those patients who suffer from insomnia by having them take an egg or two and a glass of milk at midnight, or later, if awake. The egg should be broken into a cup, sprinkled with salt, and swallowed. Patients should not be permitted to render the eggs more palatable by the addition of nutmeg, sugar, vinegar, wine, or whisky, as such measures are almost certain to create a disgust for the eggs, while if prepared as above indicated, the most sensitive patients take them willingly.

In cases that are not past the curative stage, cough subsides under the influence of rest and care, without resort to sedatives. Mixtures that increase bronchial secretions are pernicious.

When profuse hemorrhage occurs, morphine should be administered hypodermically. The author does not believe that any other drug has any influence in preventing pulmonary hemorrhage. Among the poor the trained workers of the Visiting Nurses' Association render valuable service to the patient and accomplish a great deal by keeping the other members of the family persevering in their efforts to prevent spread of the infection.

When the patients are out of bed they should be taught to eat slowly and practice deliberation in all physical movements, as such deliberateness tends to conserve nervous energy and favor the accumulation of fat. Success in the treatment of pulmonary tuberculosis depends upon the enthusiasm of the physician and his ability to prevent his patients from becoming lax in their efforts to maintain their physical condition at its highest possible standard.

GASTROPTOSIS AND ITS TREATMENT.

In the *Medical Record* of July 20, 1907, Lockwood in speaking of the treatment of this condition states that the more strict the seclusion the better the result. Do not be cajoled into the error of admitting over-sympathetic mothers and indiscreet friends into the sick-room.

The hot bath and spinal douche consists in immersion (temperature 105°) for five minutes, followed by a cold spinal douche for ten seconds. The hot applications must be moist, and may be applied either by hot flannels, spongiopiline, or a moist flannel covered with an electric pad. The whole application is to be tightly applied by an abdominal binder; such applications to be changed every two hours in the day and once in the night.

The diet is conducted on about these lines: For breakfast—Cocoa; cereal with cream and sugar; minced meat on toast, or soft-boiled eggs, rolls, butter, marmalade. 11 o'clock—Russell's emulsion. 1 o'clock—Fish or chicken, or bird; two vegetables; a farinaceous dessert (corn-starch, farina, or rice pudding). 4 o'clock—Either the remains of the farinaceous pudding, or junket, or malted milk. 7 o'clock—Like the meal

of 1 o'clock. 9 o'clock—The meal like the 4 o'clock.

Throughout the day cream (16 per cent) is to be given; and the author is not afraid of giving these patients two or three caramels after each meal, as he thinks it helps the bowels. Liquids at meals are to be restricted. No fruit or red meats are to be allowed.

If the bowels are constipated, the nurse is directed to massage the descending colon ten minutes three times a day, and to use intestinal irrigations by a to-and-fro current, not introducing more than a pint at a time, just as one would wash the stomach. The custom of giving two or three quarts of water at a time is to be deplored.

As regards medicine, it is best to start with small doses of bromide, a drug indispensable in the treatment of these cases. The author frequently employs the following prescription:

℞ Chloralis hydrastis, ʒj;
Sodii bromidi, ʒijss;
Aquæ chloroformi, ʒiv;
Spiritus anisi, gtt. vj.

M. Sig.: Teaspoonful in water after meals, three times a day.

He thoroughly indorses its use, for he believes it is impossible to get along without it. After the first ten days substitute for this prescription tincture of physostigma in 10- or 15-minim doses, substituting it for the bromide solution, first after breakfast, and then in a few days after supper, so that the patient takes physostigma after breakfast and supper, the bromide after the midday meal and at night. Toward the close of four weeks three doses of physostigma are given, and but one dose of the bromide, this at night.

During this treatment the patients rapidly improve. The weight increases, the average gain being ten to twelve pounds in the four weeks, and the lower curvature of the stomach rises, so that at the end of the four weeks it lies just under the navel. This rise of the lower curvature is no idle fancy; it is to be regularly expected. During the four weeks intragastric faradization may be employed, but the author states that he is using it less than formerly, and finds that the majority of patients do just about as well without it as with it. In impressionable patients, however, it has a very decided mental effect. The return to ordinary daily life must be gradual, and a week at least should be taken for what he calls the hardening process.

The month after the rest cure patients must be careful about overdoing, must lie down every day after lunch, and must wear an abdominal belt. Food between meals must be continued, liquids at meals interdicted, and no raw fruit allowed.

In nearly every case the first week after the rest cure shows a decided slump in the patient's condition, the patients losing a little in weight and complaining again of their gas and distress. These symptoms will pass in a few days, but it is well to warn your patients in advance that such a slump will probably occur.

Under this treatment it is rare to be disappointed. The patients gain in nutrition steadily for weeks or months. They gain on an average ten pounds in the rest cure, but at the end of the year they are often thirty pounds heavier, and somehow or other the stomach stays up in place. The results are so good from such simple means that any operation on these stomachs in the way of stretching them up in place is totally and absolutely out of the question, and should be considered a surgical disgrace.

THE TREATMENT OF FEVER CASES.

Drew in an article in the *Boston Medical and Surgical Journal* of August 8, 1907, states his early opinion that there is no specific for typhoid or pneumonia that can be depended upon has not changed, although he is willing to accept an antitoxin when proved and found true. He does not use venesection, tartar emetic, veratrum, aconite, poultices, blisters, or wet cups; nor mercurials, except an initial dose of calomel, which may or may not be better than a saline purge. He has not tested bryonia, phosphorus, aconite, or arsenic of the homeopathic pharmacopœia, and is not pre-

pared to deny to these drugs a specific action. He does give an occasional small dose of morphine, codeine, or one of the coal-tar products, but it is the author's belief that in the presence of this necessity our natural weapons of defense have not been well used.

In typhoid fever he has used acetozone quite extensively, and has credited it with germicidal and antiseptic properties. He has given this as an intestinal antiseptic, potent, if potent at all, by virtue of the nascent oxygen it gives off when decomposed. Of this antiseptic, he gives an ounce of a one-tenth of one-per-cent solution every hour, followed by six or seven ounces of pure cold water, if the patient will readily take that much. Typhoid fever patients rarely object to this solution, and commonly drink a glass of pure water readily to take away the taste. This he considers an additional advantage. He has repeatedly seen the temperature rise and abdominal discomfort increase when acetozone was omitted, and promptly decline when it was resumed. This experience has led to the conclusion that in this organic peroxide known as "acetozone" we have an entirely harmless drug of real value.

It has been held by some that the practical result of giving fever patients liberal hourly draughts of cold water is to rob the blood of its normal salts, coincident with the more active elimination of the toxins of living and dead bacteria. Drew respects this opinion because it seems to be based on a physiological principle, and he meets the objection by adding the most important salts of the blood to the diet or giving them in the form of a mildly effervescent drink. In pneumonia he often adds 2½ grains of sodium chloride, 1 grain of potassium bicarbonate, and 1 grain of ammonium carbonate to 4 ounces of cold water, to which solution is added a teaspoonful of lemon juice, which is given every hour while the mixture is slightly effervescent. By following this with 4 ounces of pure cold water we refresh the patient, assist the skin and kidneys in their eliminating function, keep up the blood-pressure, and sustain the heart. He rarely sees the necessity of giving strychnine or an alcoholic until the onset of resolution in pneumonia, and more rarely still does he give an alcoholic in typhoid fever at all. This is about the sum total of his internal medication. The pure cold water he gives, and the pure air he tries to allow, he counts first, and esteems the drugs of secondary importance. For nourishment he depends largely upon milk, which is substituted for cold water once in three hours.

PRIMARY DYSMENORRHEA.

GLASGOW in the *Medical Record* of August 3, 1907, tells us that while the young woman during the period should be advised not to make any unusual physical or mental effort beyond her accustomed activity, she is in most cases quite equal to the performance of her daily tasks. The constant calling attention to the activities of the organs of generation does not seem wise, although the young woman's guardians should see that she is properly instructed on all physiological matters relating to her future welfare. When the pain or discomfort is excessive it is wise for the patient to remain in bed while it continues severe, adopting preventive measures during the intermenstrual period.

Anemic girls who are leading lives of close confinement will be greatly benefited by spending an hour or two every day in outdoor exercise, and this they can themselves arrange by a little self-denial, perhaps, especially during the summer months. After forming the habit of daily outdoor exercise, and observing care as to diet, patients are often amazed at the improvement in their symptoms. It is a wise precaution to empty the bowels thoroughly before the expected period, as it often materially decreases the pain. During the period hot drinks and the application of external heat are of benefit; a hot sitz bath will add greatly to the patient's comfort, and a few small and repeated doses of phenacetine. During the intermenstrual period the patient should take hot douches twice a day, avoiding colds, and keeping the feet warm

and dry. Daily exercise, nutritious food, faradism when indicated, and tonics to build up the constitution are necessary. Some cases are benefited by dilatation and curettage, but not all by any means, and it is best to employ medical means with the hope of benefiting the patient before resorting to harsher measures.

Hydrastis combined with nux vomica has rendered the author good service in very many cases, the only drawback being the fact that it must be continued for a lengthened period, usually two or three months, and that it has a disagreeable taste. There are now other remedies on the market containing hydrastis, and also viburnum, which are not unattractive to the eye and not disagreeable to the taste. Some patients object to taking such drugs indefinitely, and for such apiol 5 minims, in capsule, three times a day during the week preceding menstruation, will be acceptable; or tincture of pulsatilla in 5-drop doses, three times a day during the week before the expected period, will be found useful. In all cases the patient should keep the skin and other eliminative organs active, should avoid colds, have daily outdoor exercise, and endeavor to keep the nervous and other systems in healthy condition by wholesome, nutritious food, and tonics when necessary.

THE TREATMENT OF ANEMIA.

MELTZER, in the *Journal of the American Medical Association* of August 24, 1907, tells us there is a simple method of treatment of pernicious anemia based on an advance made in the understanding of its etiology. The pathology of this disease, which is also designated as primary or idiopathic anemia, is admittedly obscure, but it was generally assumed that the cause is probably within the blood itself. During the past few years several writers have advanced the view that the disease is caused by an infection or an intoxication from the gastrointestinal canal. These surmises had not much significance, since no facts were available showing a connection between the anemia and some definite form of infection or intoxication. Recently, however, in a profound and extensive study of the chemistry of the feces and the urine and of the bacteriology of the feces of fifteen cases of pernicious anemia, Christian A. Herter made a discovery that within the intestinal tract of such patients certain specific putrefactions are going on which are caused by the activity of anaerobic bacteria, and that the bacillus capsulatus aerogenes, discovered by Welch, is greatly in evidence in the feces of these patients. With the recovery of the patients from their anemic condition the predominance of this anaerobic bacillus in the feces disappears. Here we have a definite, well-established fact that at least in a certain number of cases of pernicious anemia the anemic symptoms run parallel to the presence of well-defined anaerobic bacteria in the intestinal tract, and are probably caused by them.

Among other measures of treatment in these cases, Herter recommends frequent and thorough irrigation of the colon, since it is the chief thriving place of these bacteria. Following this suggestion, Dittmar and Hollis were able to report a few months ago cures in two cases of pernicious anemia by irrigation of the colon which resisted all other methods of treatment. A few years ago Grawitz reported several cures of pernicious anemia treated by lavage, irrigation, restricted proteid diet of animal origin, and other merely dietetic measures. It may be that lavage, as well as the restriction of the proteid diet, is unessential to the success. At any rate, the discovery that a good many cases of pernicious anemia are due to intestinal putrefaction, caused by anaerobic bacteria, and that some of these patients can be cured simply by efficient irrigation of the colon, present surely a valuable scientific and practical progress.

Another point on which the author touches very briefly relates to the rôle of iron in the animal organism and its use in the treatment of anemia.

It is an old, well-established clinical observation that inorganic iron is a most efficient remedy in chlorosis. For the last two or three decades, however, its use was

opposed and ridiculed by able physiological chemists and pharmacologists on the ground that inorganic iron cannot be assimilated or even absorbed. The history of the scientific struggle over this subject is very interesting and instructive, and it is the author's belief that the struggle is now decided in favor of the clinical position, and that recent pharmacological writers, at least the majority of them, fully admit that ingested inorganic iron is just as capable of being absorbed and assimilated as the organic iron compounds of the food.

ON THE CONTINUOUS ADMINISTRATION OF FLUIDS BY THE RECTUM IN THE TREATMENT OF ACUTE GENERAL PERITONITIS.

MOYNIHAN in the *Lancet* of August 17, 1907, calls the attention of his countrymen to an article in the *Annals of Surgery*, 1906, vol. xliii, p. 231, by Dr. Le Conte, of Philadelphia, who in discussing the treatment of diffuse septic peritonitis drew attention to the method of introducing large quantities of fluid into the rectum which he had witnessed in the clinic of Dr. J. B. Murphy at Chicago. The results which Dr. Murphy and Dr. Le Conte had obtained in the treatment of acute peritonitis due to appendicitis were so remarkable that Moynihan hastened to put the principles enunciated in that paper into practice. Certainly the most novel and in his judgment the most important of the several points mentioned therein had reference to the continuous administration of fluid by the rectum after operation. He has come to the conclusion, after a fairly large experience of it, that there are few recent therapeutic measures which are in value equal to this. Moynihan has up to the present time treated nineteen consecutive cases of acute general peritonitis due to appendicitis, with two deaths, and the recovery of several of these patients is, he believes, largely if not solely due to the continuous administration by the rectum of saline solution over a period of two to four days after the operation. But it is not only in such cases that he has found this method of value. In two recent cases of partial gastrectomy and in one case of complete gastrectomy the recovery of the patients was undoubtedly helped by this abundant supply of liquid to them. The writer describes briefly the method of administration which he has found the most useful, and expects shortly to add the details of a few cases in which he has adopted it.

The first point is concerned with the selection of a proper rectal tube. To find a perfectly satisfactory one is no easy matter. The patient during the administration of the infusion is generally propped up in bed, and if a short, solid tube is used the rubber tube attached to it is apt to kink. He has used in all his recent cases a tube one foot in length and half an inch in diameter, made of pewter, with a slightly bulbous extremity which is introduced into the rectum. The tubes are supplied to him by Messrs. Allen and Hanburys. At the end, and on all sides, of this bulb holes are pierced so that fluid can easily pass through them, and flatus can escape and can be seen bubbling through the supply-tank or funnel. If a single aperture only is present in the tube it is apt to be blocked by feces. When there are many openings the rectum is equally distended above the sphincter and the obstruction of the flow of fluid by feces does not occur. The tube is introduced about from two to three inches into the rectum, and at the anus it is bent sharply so as to lie easily on the bed. To its outer end a long rubber tube is attached, which leads to the source of supply at the bedside.

The most convenient vessel to hold the saline solution is an "infusion flask" (Sahli's pattern). This is of the type of a Florence flask, but instead of being globular it is triangular in shape, having a large base. The flask holds from three to four pints and is closed at its neck by a rubber stopper, through which there are three openings: the one admits a glass tube, which at one end reaches to the bottom of the flask and at the other is attached to the rubber tube leading to the rectum; a second admits the thermometer; and a third a tube which acts as an inlet for air. The whole glass flask

is immersed in a bath of hot water, beneath which a spirit lamp burns. This secures an equable temperature of the saline solution. The best temperature is from 100° to 102° F. If the fluid is hotter than this it is not retained well; its temperature is probably three or four degrees lower than that shown by the thermometer when the rectum is reached.

When the tube has been introduced into the rectum and the flask attached the latter should be elevated so that its base is about from three to six inches higher than the rectum. The saline begins to flow and continues to flow at the rate of about a pint an hour. It is not desirable to introduce more than one and a half pints, or at the most two pints, during the first hour; subsequently a rate of one pint in the hour should be maintained. The rapidity of the flow is altered by raising or lowering the flask. It should be regulated by the patient's comfort. If a feeling of tightness or distress is caused the flow is too rapid. As a rule no uneasiness is caused till about five pints have been introduced. It may then be necessary to retard the flow for half an hour or an hour, or even to stop it for a few minutes. In only one case has less than five pints caused distress. If the rate of flow be regulated properly and the temperature of the fluid not altered from seven to ten pints can be introduced without any interruption. If flatus reaches the rectum it can escape by the tube. If, as rarely happens, the fluid introduced acts as an enema the tube may be replaced as soon as the bowels have acted. Care and almost constant attention on the part of the nurse are necessary to make the administration a success; a marked difference in the capacity of nurses will probably be discovered by all who try the method. In place of the infusion flask a funnel may be used which the nurse must keep filling from a jug. This is tedious, and a variation in the temperature of the fluid is inevitable.

The largest quantity of fluid taken by any patient of the writer during the first twenty-four hours was 16 pints; the largest quantity administered was 29 pints, extending over three days. These quantities were borne quite easily, without any distress whatever. The change in the appearance of a patient who is absorbing fluid so rapidly is very remarkable. If the case is one of acute general peritonitis the patient who looks livid, whose eyes are sunken, whose skin is moist and cold, whose mouth is so parched that his tongue can hardly move, begins in a few hours to look ruddy and "clean," his mouth is moist, his eyes are bright, and all his aspect is one of comfort and contentment. The pulse gains volume and improves steadily in character, urine is passed in large quantities, and the skin keeps moist. Not a few patients say that they feel very hot, and some of them perspire freely. It is a question, perhaps, as to how far one is justified in carrying this treatment in patients whose kidneys are defective. In one case of partial gastrectomy the author gave 16 pints of saline solution in twenty-four hours; this represents a large dose of sodium chloride. At the end of the twenty-four hours it was noticed that the patient's face looked fuller and rosier than it had ever done, and a slight edema of the lower eyelids developed. The injection was therefore discontinued for twelve hours, to be again administered, without any ill effect.

ANEMIA.

In the course of a discussion published in the *Journal of the American Medical Association* of August 24, 1907, BRIDGE calls attention to one medicament which he believes is of great value in chlorosis. This drug is preëminently valuable in chlorosis as a therapeutic measure capable of increasing the hemoglobin of the blood. It has been shown, and clearly enough, he believes, that iron in many of these cases is of little value. The one drug in his belief is calomel in tonic doses—not cathartic doses—that is, from 1/50 to 1/30 of a grain, given three times a day, but not oftener. How it works or operates he does not know or pretend to know, but that it has a power vastly greater than the iron preparations in securing good blood and increasing the iron in the blood

there is no question in his mind. It should be given at least a month continuously, and there is, of course, no objection to giving at the same time iron or any bitter tonic—or all together.

THE BIER SUCTION TREATMENT OF TUBERCULAR SINUSES.

SEVER (*Boston Medical and Surgical Journal,* June 6, 1907) records sixteen cases suffering from tubercular sinuses treated by Bier's suction method. By this treatment he notes that the contents of abscess cavities are completely drained off, thus removing the pus, and that the vacuum causes a hyperemia which stimulates the healing process. The cups are very small, circular ones of glass, about 1½ inches in diameter, 2 inches in height, with the top tapered to fit a rubber tube with a rubber bulb. The cup is applied wet, the bulb being compressed at the time, thus creating a vacuum, which is of great enough degree to cause the cup to stay in place.

Where this was applicable the cup method was supplemented by the compression bandage—for instance, when the abscess involved the knee, elbow, hand, or ankle.

The treatment was carried out daily for one hour at a time, nor was the suction strong enough to cause pain. Every few minutes the cups were removed to clean them, and to renew the vacuum. Where the compression bandage was used this was left applied throughout.

Several cases, including those in which hemorrhage occurred, either lost ground in general condition or did not gain at all, but promptly improved following the omission of the treatment.

At first there was a considerable increase in the amount of the discharge, which later diminished. In some cases the discharge remained more abundant than before the institution of the treatment. The author notes that in a number of cases the condition was improved both generally and locally. Half the cases were either wholly healed or markedly improved. In five the conditions were not apparently improved locally, but there was distinct gain in weight and color-index. Three cases lost ground to such an extent that the treatment had to be omitted. The improvement in their local condition was largely due to the cupping, seconded by the improvement in their general condition.

The occurrence of hemorrhage was noted in but two cases. When the sinuses were of long duration they were less benefited than those of comparatively recent cases.

RIGID FLATFOOT TREATED BY EXCISION OF THE SCAPHOID.

LEGG (*Boston Medical and Surgical Journal,* June 6, 1907) observes that rigid flatfoot is a result of congenital flatfoot, the patients having always noted that their feet were flat. They do not experience discomfort until after puberty, and this is because of the increased weight at that time. The body weight resting more or less on the scaphoid, the pain is often extreme.

It is true that many cases of congenital flatfoot go through life with perfect flexibility. If the foot becomes rigid with a falling longitudinal arch and downward displacement of the scaphoid bone, associated with alterations in the shape of the tarsal bones, and when neither deformity nor disability can be helped by plates or braces, Legg considers excision of the scaphoid peculiarly applicable. The objects of the operation are to remove a wedge from the inner side of the foot, thus allowing the correction of the arch, and the relief of pain by the removal of pressure. A curved incision is made over the scaphoid with the convexity directly downward. The scaphoid is grasped with lion forceps and enucleated by freeing its articulations with the tarsal bones. The foot is then put in correct position and secured there by plaster of Paris. The tendons of the peronei, and in some cases the tendons of the tibialis anticus, extensor proprius hallucis, and extensor longus digitorum, should be divided in order to fully correct the valgus.

After-treatment is of major importance. The foot should be maintained in its correct position by plaster of Paris for three or four weeks, after which a shoe may be fitted with a properly adjusted plate, the patient being

instructed still to use crutches for another week. Massage, manipulations, and exercises designed to furnish strength to the foot are of great benefit. After five or six months the plates may be omitted.

In the Orthopedic Department of the Carney Hospital thirteen operations of excision of the scaphoid for the relief of rigid flatfoot have been performed, and the results of this operation in one to five years after operation, the writer observes, are that pain is relieved in all cases; that deformity in most cases can be corrected. The flexibility of the foot, however, cannot be regained, though the operation does not weaken the foot. By removing the scaphoid, which is the displaced keystone, and having the internal cuneiform occupy its normal position the foot is strengthened.

IODINE-BENZINE DISINFECTION.

The use of a solution of iodine in benzine is still strongly praised by HEUSNER (*Deutsche Zeitschrift für Chirurgie,* lxxxvii, 4, 1907), who gives additional directions for its preparation and use.

He uses a solution of 1 part of iodine in a mixture of 750 parts of benzine and 250 parts of liquid petrolatum. Solution may be rapidly effected by dissolving the iodine first in 10 parts of ether or by using a 10-per-cent tr. iodi. The addition of the petrolatum prevents the irritation which may result from the removal of the fat of the skin. For very tender skins or around inflamed parts more petrolatum may be added. There is the same danger of explosion as with pure benzine, and the waste left after washing must be handled carefully. The waste is small, as so much evaporates. Each person is given ½ pint of fluid for disinfection of the hands, which must not be washed in water first, as the agent acts better when the skin is perfectly dry. If necessary the part may be washed in petrolatum afterward. After cleansing for five minutes with a brush and coarse cloth the skin is smeared with vaselin containing 2 per cent of iodine, and the hands of the surgeons and nurses covered with cotton gloves, as otherwise there is difficulty in holding slippery objects. After the operation the stain left by the iodine may be removed by washing in alcohol followed by sodium hyposulphite. No mercurial disinfectants can be used with this, as an irritating salt is formed by the action of the iodine. Catgut soaked in 2-per-cent iodine-benzine for two weeks and preserved dry or in 2-per-cent petrolatum solution keeps perfectly and is sterile.

INJURIES OF THE ULNAR NERVE—TREATMENT.

The ulnar nerve is especially liable to injury at the point where it passes over the inner surface of the humerus above the elbow, and BORCHARD (*Deutsche Zeitschrift für Chirurgie,* lxxxvii, 1) states that we should always seek here for the source of trouble in case paralysis of this nerve follows trauma and there is no sign of external injury.

The nerve may be injured indirectly by a violent contraction of the triceps, which should normally push the nerve a little out of its way. If the motion occurs so rapidly that the nerve has not time to move, it may be pinched between the muscle and the bone. In blows with dull instruments, which cause no severe injury of the soft parts, the exposed portion is most often injured. In cuts the nerve may either be directly injured or may be pressed upon by scar tissue, as the wound heals. After fracture the same is true, but in addition it may be stretched by passing over extensive callus, and thus may be led to degenerate.

Operation should not be performed before any external wound is entirely healed and a fracture united, as the same condition may follow the process of healing, especially in suppurating wounds. If the nerve is entirely cut through by a sharp instrument, it is of course united when the wound is stitched. If the skin is not broken and the nerve entirely severed it is best to defer operation until any effusion of blood is resorbed, so that union by first intention may be expected. If the nerve is not certainly severed it is best to wait six to eight weeks, and if the condition is not improving, to expose the nerve. If there is permanent neuralgia it is

best to operate promptly, unless there is evidence of injury of the cervical sympathetic. In case of fracture or soiled, contused wounds, it is wise to wait until other tissues are healed before interfering.

After operation it is most important to guard the nerve from further scar pressure, and this is done by embedding it between two layers of muscle. If there is no result after operation it is probably because the nerve is pressed upon by recent scar tissue, and a second operation may be performed to free it. If the nerve is exposed, and found to be thickened and degenerated, but continuous, it should be tested electrically, to determine if it is conductive, and if not the degenerated portion should be resected. If the space left between the ends of the nerve is not more than 1½ inches, the ends may be drawn together and united. If it is more than this, it is better to resect a little of the bone if this would not make the arm too short, and thus unite the ends directly. Longer breaks must be made up by plastic operation, which are best performed by splitting the nerve and leaving the uniting section in connection with the nerve. Implantation of pieces of other nerves gives no better results than the formation of a tube in the tissues to guide the direction of the nerve growth, or the use of catgut threads for the same purpose. In some cases the nerve is injured by contraction of scar tissue in its own capsule, and the simple splitting of this is enough to restore its conductivity. If the bone is very irregular and rough it is necessary to form a thick cushion of muscle between it and the nerve, to protect this from irritation. In some cases the nerve will be found so completely degenerated that it is necessary to graft another nerve root on it. The median and musculocutaneous are the only ones which should be used for this purpose. The after-treatment, by means of electric currents along the nerve and massage to improve local nutrition, is of the greatest importance. Return of function is obtained in about three-fourths of all cases; it generally begins in six to eight weeks, and may continue for as much as eighteen months.

NEW VARIETY OF INTERNAL HERNIA.

A form of hernia which has not hitherto been described is mentioned by Von Arx (*Deutsche Zeitschrift für Chirurgie,* lxxxvii, 4), who has seen two cases.

The case first described is that of a man of powerful build, who suffered with symptoms of ileus whenever he made any excessive exertion. The pain was always in the same spot, in the left iliac region, and as it was steadily growing worse operation was advised. The abdomen was opened in the middle line, and at first nothing abnormal was detected. Search disclosed a pocket of fibrous tissue, extending from one rectus muscle to the other, across the linea alba. This pocket was lined with peritoneum, and a tip of the omentum showed a tendency to enter it. The pocket was split from end to end and was closed. Great difficulty was experienced in closing the wall, as the recti muscles were cylindric rather than flat, and were very hard to draw together. There was no further pain.

A similar case was seen in a woman, in whom a fibrous cord, separated from Poupart's ligament, could be felt from outside. The omentum was pinched between this cord and the ligament, with very similar results. The cord was divided extra-peritoneally, and all symptoms ceased.

CHRONIC INTERSTITIAL PANCREATITIS—OPERATIVE TREATMENT.

Although the fulminant character of acute pancreatitis has led to operative treatment of this condition, the chronic forms have not been looked upon as material for the surgeon. Martina (*Deutsche Zeitschrift für Chirurgie,* lxxxvii, 4) shows that the condition may be relieved, at least temporarily, by such treatment.

The symptoms in two or three cases led to a suspicion of cancer, and although no tumor was found at operation, the head of the pancreas seemed so hard that it was exposed, to determine its condition. The entire pancreas was hard and tense, and the capsule so much distended that on incising it the pancreatic tissue bulged out far beyond

it. The pieces removed for examination showed the process to be chronic pancreatitis, but the operation resulted in complete relief of all symptoms. Martina believes that the relief was due to lessening the pressure of the capsule on the swollen organ, and there has been no return of symptoms for three years since the operation. As this condition is ordinarily a result of disease of the bile passages, it would be wise to examine the pancreas in all operations on these, and to split the capsule if it seems too tense.

SURGERY OF THE KIDNEYS.

All the cases in which operations for renal conditions have been performed in Braun's clinic, in the last ten years, are reported by DOERING (*Deutsche Zeitschrift für Chirurgie,* lxxxvii, 1), who gives the case histories, and a summary of the principles which guide the treatment of each condition.

1. *Hydronephrosis.*—Simple nephrotomy is of no value in these cases. It rarely leads to cure and convalescence is extremely slow. If the other kidney is in good condition and operative treatment is demanded, the diseased organ should be removed, unless the distention is due to a stricture of the ureter, which can be relieved by plastic operation, this being often the case when there is nephroptosis.

2. *Pyonephrosis.*—Simple nephrotomy is of very little value, rarely giving good results and almost always leaving a fistula. The constant secretion of pus causes systemic toxemia, with injury to the opposite kidney. Nephrectomy is always to be performed unless it is forbidden by the general bad condition of the patient. In this case a temporary nephrotomy may be performed and the kidney drained externally. The systemic condition and the condition of the other organ may then improve sufficiently to permit a radical operation.

3. *Renal Calculus.*—(Only cases with hydro- and pyonephrosis are considered here.) If it is impossible, by removal of the stone, to make a free passage to the bladder, or if the substance of the kidney is so thoroughly destroyed that no further function is to be expected, nephrectomy is the operation of choice, if the opposite organ is active. In case of anuria it is best to perform bilateral nephrotomy at once, as there is as much likelihood of bilateral stone as of reflex anuria.

These views are much more radical than those of most authors, and differ especially from those of Kuester, who considers nephrotomy or pyelotomy the operation of choice in both hydro- and pyonephrosis, and does not sacrifice the kidney until this method of treatment has shown itself of no value in the individual case. Riedel, Eiselsberg, and Trendelenberg occupy a midway position, but tend to prefer excision of the diseased kidney in most cases.

EXCISION OF THE BLADDER—NEW METHOD.

Since it has been known that the papillomata of the bladder are frequently malignant, the total extirpation of this organ has been performed several times. Apart from the vascularity of the perivesicular tissue, the chief difficulty of the operation is to provide for the escape of the urine. The cut ends of the ureter have either been left in the open wound, implanted in the rectum, or implanted in the vagina. In the first instance the patients all succumbed to septic infection of the wound, in the second to pyelonephritis from ascending infection, and although the last method has given some good results, it robs the woman of sexual power and is only applicable to the female. In addition there is a constant, foul-smelling discharge from the vagina.

To avoid the disadvantages of each of these procedures is the aim of the operation described by ROVSING (*Archiv für klinische Chirurgie,* lxxxii, 4), the peculiarity of which is that the ureters are brought out through the skin by an incision different from that of the operation. The technique of the operation, which has been performed three times, with good results in each case, is as follows:

The bladder is removed unopened, like a cystic tumor. It is filled with 200 Cc. (6

oz.) of phenosalyl, and the patient placed in the Trendelenburg posture. The bladder is exposed by a curved incision, convex below, and the insertions of the vecti are partly severed. The loose connective tissue around the vertex and sides is then divided after ligating in sections, so as to avoid all bleeding. The peritoneum is then separated from the posterior wall. If it is firmly adherent it is removed with the bladder, and the gap in the peritoneum repaired at once. The ureters are cut through with the cautery, between ligatures, one-half to one inch from the bladder. The base of the bladder is then freed, in males the prostate also, and the urethra burnt across between ligatures. In males great care must be exercised not to injure the rectum, and a clamp is left on the stump of the membranous urethra for twenty-four hours, to prevent bleeding. In this way there is almost no loss of blood. The large wound is spread with a piece of gauze, and gauze tampons, moistened with one- to two-per-cent copper sulphate solution, are packed into it. The ends of the strips are brought out at the center of the wound, the vecti are united with wire, and the wound is sutured. The ureters are then exposed on each side by an incision immediately below the kidney, beginning at the edge of the erector spinæ and extending outward about two inches. The ureter is hooked up by the bent finger and drawn out of the wound as it is freed from adhesions by a finger thrust deep into the opening. Thus we have both ureters hanging out from Petit's triangle for their complete length. The incisions are completely closed and the ureters allowed to hang free in a sterile glass tube, after a No. 12 catheter has been introduced into each and through the abdominal wall. It is better to permit the free end of the ureter to drop off by dry gangrene than to cut it close to the skin, as it retracts and makes a funnel-shaped opening which is very hard to drain. If the end is allowed to fix its own line of demarcation there is left a small papilla, in which is the mouth of the ureter and to which a drainage apparatus is easily adjusted. The necrotic portion of ureter is separated at the end of eight days, and the catheters withdrawn. The flow of urine is provided for by a bandage, in which are two silver plates, each with a hole which fits over the mouth of a ureter and opens into a silver tube which leads to a urinal hanging at the pubes. The first case has worn this apparatus day and night for eleven months, and there has been no leakage nor soreness of the skin around the ureters.

EXPERIMENTAL CONTRIBUTION TO EARLY AMPUTATION IN TETANUS.

HUTCHINGS (*Sonder-Abdruck aus der Rindfleisch-Festschrift*, Leipzig, 1907), with the idea of determining whether or not amputation is a serviceable therapeutic agent in the treatment of tetanus, conducted a series of experiments. After inoculation of guinea-pigs, on the first outbreak of symptoms a certain number were subjected to amputation. Others were not thus treated. The amputated animals died in precisely the same time and with exactly the same symptoms as those without operation. He noted the same result in the case of dogs, though the latter are comparatively immune to tetanus infection. Similar results were obtained in the case of sheep.

FISTULA OF THE URACHUS.

The idea that a fistula of the urachus may be caused by an obstruction to the normal urinary passages, even in fetal life, is combated by DRAUDT (*Deutsche Zeitschrift für Chirurgie*, lxxxvii, 4), who considers that it is an anomaly similar to persistence of Meckel's diverticulum.

The affection is always characterized by peculiarity of the shape of the upper part of the bladder, which is tubular instead of vaulted. If there is difficulty in determining the nature of the fistula, a chemical examination of the secretion will show its urinous nature, or an injection of indigo-carmine may be given, the blue color showing that the fluid is from the kidneys. The canal may be patulous, but if the urethra is free no urine may escape from it. In this way it may appear that an obstruction to the urin-

ary flow caused the fistula. The only treatment to be recommended is extirpation of the entire tract with the navel. Any part of the canal remaining in connection with the navel may lead to a cystic growth, or to a blind fistula which is not easy to heal. The peritoneum is always injured in the radical operation, but in infants this is of no importance, on account of its cobwebby character.

SURGICAL FORMS OF ILEOCECAL TUBERCULOSIS.

HARTMANN (*Bitish Medical Journal,* No. 2415, 1907), after calling attention to the fact that the clinical recognition of this form of tuberculosis is of comparatively recent date, describes two forms.

The enteroperitoneal form is ulcerative in type and rarely forms strictures.

The hyperplastic form, simulating neoplasm, is generally limited to the cecum and spreads in the direction of the colon, seeming to be a descending tuberculosis. The cecum appears externally increased in volume, more or less mobile in the iliac fossa, and often included in a fibroadipose mass which attains a thickness of three or four centimeters. The latter is a manifestation of the chronic inflammatory process. It may spread as far as the spinal column and contain lymph glands. The regional lymph glands are involved, and are more voluminous than in cancerous degeneration. The mesocolon is often retracted, displacing the colon and cecum upward. Mucous membrane may or may not be ulcerated. At times it shows villous growths.

Tuberculous lesions may develop at the surface of the mucous membrane, or chiefly in the subserous coat. When the mucous membrane is especially affected the ulcerations are more or less deep. As a rule they stop at the muscular coat. The affection is equally observed in both sexes, and attains its maximum frequency between the ages of twenty and forty. The patient may or may not have coincident pulmonary tuberculosis. Some of the cases exhibit the reaction of the peritoneum and its surroundings, simulating more or less appendicitis, others intestinal stricture and suggest neoplasm. This the more so since direct examination nearly always demonstrates the presence of a tumor.

In the enteroperitoneal form, together with the signs of the local inflammation and the tumor, the stools are frequently copious, liquid, and contain blood. At times the first symptom indicating trouble is a sharp attack of pain. Subsequently, however, the tumor increases rather than diminishes, and there is a steady progression. With the enteroperitoneal form there is often a subacute abscess formation opening spontaneously through the skin in the femoral region, discharging serous pus mixed with fecal matter. If such abscesses open into the intestine their evacuation is accompanied by purulent discharge per anum; if they burst into the peritoneal cavity death results from acute peritonitis. Associated with these ulcerative forms there is usually a pulmonary tuberculosis.

Clinically, the hyperplastic form has an insidious onset with loss of appetite, slow digestion, and disagreeable but vague sensations in the right iliac fossa. This condition may remain stationary for months, improving temporarily under courses of treatment. Later there develop signs of intestinal obstruction. At times the tumor is placed above the normal position of the cecum. In the hyperplastic form the lungs are often intact. The average duration of the disease is two and a half to three years.

The enteroperitoneal form of ileocecal tuberculosis may be mistaken for appendicitis, but the absence of resolution of the indurated mass, the subacute attacks of inflammation, the concomitant diarrhea, and the frequent coexistence of pulmonary tuberculosis should guide one to a correct conclusion.

In actinomycosis after abscess formation the diagnosis is apt to be made by microscopic examination. Errors may also arise in the development of sinuses of bony origin.

The hyperplastic form may be mistaken for neoplasm; its evolution is however

slow, the tumor is not nodular, and it preserves to an extent the normal shape of the cecum.

Treatment is surgical. In cases of glandular tuberculosis with subserous nodules, with signs of slight localized peritonitis and without symptoms of lesions in the intestinal mucous membrane, the simple explorative celiotomy may be followed by a cure.

Hartmann has summarized from the literature on the subject 229 operations. There were 9 partial excisions of the cecum, with 8 cures and 1 death; 78 resections with end-to-end anastomosis, with 59 cures and 19 deaths; 19 resections with end-to-side implantations, with 16 cures and 3 deaths; 31 resections with side-to-side anastomosis, with 26 cures and 5 deaths; 10 resections in two sittings, with 7 cures and 3 deaths; 29 short-circuitings (ileocolostomies), with 25 cures and 4 deaths; 9 unilateral exclusions, with 8 cures and 1 death; 22 bilateral exclusions, with 20 cures and 2 deaths; 22 patients were subjected to multiple operations, with 14 cures and 8 deaths. Of the 229 cases operated on there were 46 deaths. Before 1900 there were 73 cases with 22 deaths, a mortality of 30 per cent. After 1900 there were 58 cases with 7 deaths, a mortality of 12 per cent.

Hartmann personally has made seven resections for tuberculous disease, with one death, and that a case operated on before 1900. The disease left to itself is always fatal. The method of ablation in two sittings seems unnecessary in tuberculous disease of the cecum, where the obstruction is never extensive.

Through an incision in the iliac fossa we can reach the diseased cecum and take it out of the abdomen, limiting with gauze the field of operation. The breaking down of adhesions does not present great difficulty. It is important to remove with the cecum the glands generally occupying the ileocecal angle, which are always enlarged and often caseous. Resection having been performed, the ileum and the colon are united end to end or side to side. Hartmann prefers to close the cut intestines and do side-to-side anastomosis, using two sutures, both continuous. The inner one includes all the coats, the outer the subserous and the muscular and mucous coats. In the enteroperitoneal form, or when with the hyperplastic tuberculosis there is an extensive mass of adhesion, resection is dangerous. In the indirect treatment the exclusion of the diseased part is indicated. Generally unilateral exclusion is sufficient. The bilateral exclusion with closure of both ends is especially used in cases of fecal fistula. Hochenegg advises bilateral exclusion and leaves both ends of the excluded part opened and stitched to the skin. Sometimes this practice has allowed a secondary extirpation. Even when secondary resection is not possible, the improvement is such that the patient has no trouble, gains weight, and is cured.

By unilateral exclusion is meant section of the ileum, suture of its distal end, and implantation of its proximal end into the transverse or descending colon. By bilateral exclusion is meant, in addition to the procedure just described, section of the colon in its ascending or transverse portion and suture of the two ends, thus leaving the cecum and ascending colon shut off from any communication with the general alimentary canal.

THE TREATMENT OF INFECTIOUS PYELONEPHRITIS.

Juy (*American Journal of Urology*, July, 1907) summarizes a lengthy, but extremely able, article on this subject.

Simple infectious pyelonephritis can usually be cured by sufficiently prolonged medical treatment. It is consequently necessary to look for the symptoms in order to make as early a diagnosis as possible.

It is by a systematic examination of the ureter in its abdominal course as well as in its passage through the pelvis that pyelorenal infections are to be detected. The painful points (subcostal, paraumbilical), the sensation of a large and painful ureter ascertained by vaginal examination, painful spots on the prostatic cornuæ, ureterovesical and pyelovesical reflexes, associated

with pyuria and nocturnal pollakiuria, form a clinical complex described by Bazy, which will allow one to make sure of the existence of a pyelonephritis.

Medical treatment includes hygienic measures and diet. As long as pus cells are present in the urine, the patient should be kept in bed on an absolute milk diet. Balsams may be useful, but at the present time there is a tendency toward the use of internal antiseptics; salol and especially urotropin and helmithol have given really remarkable results. And lastly, in certain cases, the medical treatment is to be completed by hydrologic medication.

The amelioration and cure of simple pyelonephritis are announced by the disappearance of the painful points along the ureter, the cessation of the nocturnal pollakiuria and pyuria.

In the pyelonephritis with distention, the indication for operation is, above all, furnished by changes in the general health, the persistency of the pyuria, and the increase in size of the kidney.

All surgical interference in cases of septic retention should be preceded by an examination as to the functional value of both kidneys. In the first place it is useful to study the total urinary depuration by the classical procedures, such as histological and chemical examination, cystoscopy, etc. These procedures are afterward applied to the study of the urine coming from each kidney, collected either by ureteral catheterization or segregation.

Nephrostomy is the operation of choice in septic pyelorenal retentions.

Lumbar fistulæ, which persist, being kept up by an incomplete retention, should be treated by secondary interference; lateral anastomosis of the ureter to the renal pelvis, resection and transplantation of the ureter, or orthopedic resection of the kidney, will result in a cure.

From the progress accomplished in conservative surgery of the kidney, secondary nephrectomy presents very limited indications.

The pyelonephritis of pregnancy, on account of its particular evolution, should be treated medically, and surgical interference of the kidneys is only indicated after removal of the fetus. Labor should be induced only in rare exceptions.

TORSION OF THE SPERMATIC CORD.

In the course of an editorial on this subject in the *American Journal of Urology* for July, 1907, the following comments in regard to diagnosis and treatment are given:

The diagnosis of torsion of the cord is a matter of extreme difficulty in many cases. One usually thinks of a strangulated inguinal hernia with a tendency to intestinal necrosis, and it is only during the operation that the true condition of affairs is revealed. At other times an orchitis arising in a testicle in ectopia is the diagnosis, but there are no distinctive signs which will allow one to differentiate the two affections, and it has been asserted by Vanverts that a testicle whose cord is strangulated becomes easily inflamed and gives rise to lesions of inflammatory orchitis. The causal traumatism may also be the means of leading one into an erroneous diagnosis, which may be that of a deep-seated hematoma. But from the very beginning of the trouble the symptoms of internal strangulation are very prominent, and show the necessity for an immediate operation; in other words, in many cases the diagnosis is subordinated to the surgical intervention.

The prognosis of this form of strangulation is serious, unless treated surgically, because the consequences of torsion of the cord means the loss of the testicle. Spontaneous untwisting is the most favorable outcome, but in order that the testicle be free from any lesion this occurrence should take place early in the process, during the first few hours, otherwise the parenchyma of the gland becomes hyperemic, then degenerates, and finally undergoes atrophy.

If reduction of the torsion does not arise during the first few hours surgical operation is absolutely necessary, and one should not wait too long in hope of a spontaneous cure, because the testicle will rapidly

undergo disintegration; one should interfere before any invasion of the surrounding regions from the necrotic process has taken place.

The nature of the operation is a question to which much thought must be given, and whether or not a child should be submitted to castration for torsion of the cord is a matter of much conjecture. According to modern surgery, however, it is hardly to be discussed; given the advanced state of testicular lesions met with in all such cases, the facility of the recurrence of trouble, and the impossibility of solidly fixing the testicle, no hesitation is permissible, and the gland should be removed after reduction of the torsion of the pedicle. To allow a testicle to remain after reduction of the torsion simply means the continued possession of a diseased organ which will be useless in the future, and exposes the subject to further attacks of strangulation at no distant date.

BACTERIAL CUTANEOUS DISEASES.

ALDERSON (*Journal of Cutaneous Diseases,* July, 1907), after a careful study of the specific treatment of bacterial skin diseases, by which he means the treatment by inoculation of heated bacterial suspensions, announces the following conclusions:

It has not by any means been proven that opsonic therapy produces good results in acne vulgaris, furunculosis, sycosis nonparasitica, staphylococcia, lupus vulgaris, or tuberculosis cutis, any more expeditiously than the usual approved methods.

Most of the dermatological cases were "much improved." Relatively few were "entirely well." These results were accomplished only after prolonged opsonic treatment extending over weeks and months.

So far none of these cases have been reported by dermatologists, but have come from the records of surgeons and general practitioners, who might very easily misinterpret the clinical picture presented by certain skin diseases in their different phases. For instance, a patch of lupus vulgaris from which the crusts have been washed, and over which superficial healing has taken place, might readily deceive one not specially trained to observe cutaneous lesions.

Opsonic treatment is of undoubted assistance in certain chronic bacterial skin diseases. To produce the best results, much auxiliary treatment is necessary. External and internal medication, dietetic and hygienic measures, and means of producing local hyperemia should also be employed.

INTRA-ARTICULAR INJECTIONS IN THE TREATMENT OF DISEASES OF THE HIP-JOINT.

CALOT (*Journal de Médecine,* tome lxxviii, 1907) warmly recommends intra-articular injections not only in the treatment of coxalgia, but for the relief and cure of practically all chronic arthritic affections, such as those incident to rheumatism, gout, blennorrhagia, and syphilis.

In beginning cases of coxalgia he employs a preparation made up of oil 50 grammes, ether 25 grammes, creosote 3 grammes, iodoform 7 grammes, injecting each time from 3 to 10 grammes according to the age of the patient. The needle employed is from 8 to 10 centimeters long, with the cutting point as short as possible. In fungating forms he injects 20 grammes of glycerin and 3 grammes of camphor naphthol. After four injections the contents of the joint become fluid. Thereafter the first mixture is used. About a dozen injections are made at intervals of five or six days. During injection the joint is subjected to extension and immobilization. After the completion of the course the patient is kept at rest for five or six months with extension. Complete cure is accomplished in about a year. Calot states that the injection is readily thrown into the interior of the hip-joint. In a child from eight to fourteen years old the needle is driven in 2 to 2½ centimeters below a horizontal line, passing through the pubic spine and 2 to 2½ centimeters external to the femoral artery. In the adult this reading is changed to 3 centimeters, or a point midway between the femoral artery and a vertical line drawn down from the anterior superior iliac spine. The

needle is entered with a slight inclination upward and inward. The beveled surface at its end is so turned that it faces in the same direction. The point is entered until it touches bone. Thereupon the syringe is lowered, the point still being kept in contact with the bone, and the injection is driven in.

INDUCTION OF LABOR IN CONTRACTED PELVES.

COOKE (*American Journal of Obstetrics and Diseases of Women and Children*, June, 1907) presents an article under this title stating that a primigravida, and, in many instances, a multigravida, with no cervical laceration, will often show a more or less rigid cervix with no marked softening or dilatation, even after preliminary treatment with gauze. In such cases the Krause method of stimulating uterine contractions is the best.

The patient should be placed in the lithotomy position and the anterior lip of the softened cervix grasped and drawn down with a bullet forceps or vulsellum. A silk or linen bougie about the size of a lead-pencil, which has been prepared by thorough scrubbing with soap and warm water and then soaked for one hour in *cold* bichloride solution (1:1000), is fitted with a sterilized stiff wire stylet and anointed with sterile vaselin. This appliance, curved in the shape of a male sound, and guided by the fingers of the left hand of the operator, is now passed into the uterus, exactly as a sound is introduced through the penis into the male bladder.

When the tip of the bougie has passed well around the globular fetal skull and points away from the promontory of the sacrum, the ring of the stylet is held firmly by the nurse and the operator slides the bougie off it and into the uterus, between the membranes and the muscular wall, until not more than two or three inches project from the external os.

The stylet is held in place merely to maintain the curve around the fetal skull, and is withdrawn as soon as the bougie is in place. No force may be used in the introduction of the instrument, and when this little operation is performed gently and carefully the patient will suffer in no way, the sacral promontory will not be impinged upon, the membranes will not be ruptured, and certainty of action is practically assured. If sepsis follows the blame will usually lie with the operator.

The vaginal canal is now snugly packed with gauze, and if after twelve hours no labor pains have occurred, the gauze is removed and the bougie reinserted or another placed by its side.

It seldom happens, however, that the first bougie, if properly passed up to the fundus, fails to produce the desired result.

As soon as labor pains are well established both the packing and the bougie should be withdrawn and the case allowed to proceed without further assistance. It is a serious mistake to leave the bougie in place until it is forced out of the uterus by the contractions. Such practice not infrequently results in premature and high rupture of the membranes.

In the case of a multigravida with a short, softened, and dilated cervix, the author prefers his expansion rings. These rings are of such simple construction that they can readily be made by the obstetrician. One ring will suffice for several cases, unless the spring rusts and breaks.

The appliance consists simply of a soft-rubber catheter with the tip cut off, into which is passed a long spiral watch-spring of the cheaper grade. This forms a circle when in place, and the approximate ends of the catheter are sewn together.

When boiled the instrument is sterile and ready for use.

It is then pinched up at one point and tied with bobbin tape in a bow-knot with short loops and long ends, and grasped with a bullet forceps.

The anterior lip of the cervix is now drawn down and held by an assistant or nurse, and the constricted segment of the ring, guided by the fingers of the left hand of the operator, is introduced, by means of the bullet forceps, into the cervix and just through the internal os.

The operator, still holding the bullet forceps firmly in place while the anterior cervical lip is steadied by the nurse, grasps one side of the ring between his thumb and forefinger and pushes it slowly and gently into the uterus, until about half has passed the internal os.

This is accomplished without pain or discomfort to the patient and with absolutely no danger of rupturing the membranes.

When the ring is in place, in the form of a figure 8 with its greatest constriction at the level of the internal os uteri, the vagina is packed with gauze as before, and labor may be expected to begin within a few hours or even minutes.

It is well to attach a tape to the vaginal portion of the ring, lest it work its way into the uterine cavity.

It has been the writer's experience that in selected cases, and by reason of expansibility and property of worming its way into the cavity of the uterus, this little contrivance possesses an almost uncanny power to incite uterine contractions, while its insertion is so simple when the os is soft and patulous, and its actual inability to puncture the ovisac is so apparent, that the author believes it to be worthy of careful trial.

As soon as labor pains begin the ring and the vaginal packing should be removed at once, and the case allowed to go on as when the Krause method is employed.

In conclusion he states that the induction of premature labor in the case of a primigravida should seldom be performed unless by one who has made a special study of the subject, for nearly eighty per cent of labors in moderately contracted pelves end spontaneously, and it is wiser for any one, other than the obstetric expert, to let the woman "try herself out" in her first confinement.

In the case of a multigravida with unmistakable pelvic contraction and a history of past operative deliveries and death of the infant, the induction of premature labor is clearly indicated, and if undertaken at the proper time and performed in a proper manner, the results will be satisfactory in a very large proportion of cases.

The idea that the fetal mortality in well-selected cases of induced labor is unduly high is absolutely fallacious, for if these same women were allowed to go on to term and were then delivered by operative measures, the infantile death-rate would be infinitely greater.

POSTOPERATIVE DILATATION OF THE STOMACH.

SEELIG (*Interstate Medical Journal,* June, 1907) records the case of a patient thirty-five years old, operated on for a large inguinoscrotal hernia complicated by an undescended testis. The patient left the table in excellent condition and remained untroubled for twelve hours, when he began to complain of nausea and pain in the epigastrium, accompanied by slight distention limited to the epigastric region. Twenty-two hours after operation the patient vomited a large quantity of dark-yellow fluid. This was followed by temporary relief of symptoms and recurrent vomiting in spite of gastric lavage. The pulse gradually became accelerated until it reached 120 beats to the minute, the patient presenting the appearance of supervening collapse. After projectile vomiting of 10 ounces of foul-smelling, dark-brown fluid, he was entirely free from pain. His stomach was washed out, evacuating large quantities of dark-colored fluid which contained bile, and shreds of mucosa infiltrated with blood. The patient was placed in the exaggerated Trendelenburg posture, whereupon the symptoms immediately abated. Hiccough, vomiting, pain, and distention ceased. Flatus was expelled freely and voluntarily and the pulse slowed down to 78. At the end of twelve hours the foot of the bed was lowered. Within an hour there was a recurrence of pain, distention, hiccough, vomiting, and rapid pulse. The foot of the bed was raised again, and immediately all symptoms ceased. The patient was kept in the Trendelenburg position for the succeeding four days, his condition all the while continuing normal. On the fifth day the ordinary dorsal decubitus was resumed, with no bad results, and from this time on recovery was uneventful.

REVIEWS.

BLOOD-STAINS: THEIR DETECTION, AND THE DETERMINATION OF THEIR SOURCE. A Manual for the Medical and Legal Professions. By Major W. D. Sutherland, M.D., of His Majesty's Indian Service. William Wood & Company, New York, 1907. 167 pp.

The consideration of blood-stains, with special reference to their methods of detection and the possible differentiation of blood from similar and dissimilar sources, is usually a matter treated in text-books, manuals, or systems, by an editor or by some writer who, usually, has given study to but few phases of the exceedingly complex problem. The biological tests for blood are rarely stated with clearness by those who consider the matter entirely from a chemical standpoint. Micrologists, spectrologists, and even chemists interested in the examination of blood for medicolegal purposes are rarely biologists. Only occasionally are systematic writers on diseases of the blood fitted, by training, for lucid exposition of its chemistry. The present author possesses that clearness of exposition and judicial consideration which characterizes many English writers, particularly in the arts and sciences. For these and other reasons the present monograph constitutes an important addition to the literature of medicolegal hematology. The volume contains chapters on the solubility of blood-stains, chemical tests for blood, spectroscope tests, the use of the microscope in the detection of blood-stains, and five chapters dealing largely with the serological methods. Illustrative cases have been culled from numerous sources, many of which are not accessible in English, and the volume concludes with an exhaustive bibliography. Those interested in the subject will find especially valuable information on the precipitin test and on the alexine-fixation or complement-deviation test.

Major Sutherland commends as trustworthy the precipitin test, into which he goes with great detail, and tentatively views with approval a more extended use of the complement-deviation method. As a piece of book-making the little volume may be considered acceptable. W. M. L. C.

SQUINT AND OCULAR PARALYSIS. By Lucas Hughes, M.R.C.S. Eng., L.R.C.P. London. H. K. Lewis, 136 Gower St., London, W. C., 1907.

The reading matter in this volume is divided into three parts—functional squint, paralysis of the muscles, and disturbances of muscular balance—each comprising about one-third of the number of pages. The author gives his reason for not following the usual classification—the inclusion of heterotropia under squint—in the following quotation (p. 168): "Heterotropia may be regarded as a later stage of heterophoria. The effort to maintain the visual axes in their proper direction breaks down, and an actual deviation (squint) becomes manifest. Some surgeons, especially in America, apply the term to all cases of squint, while others speak of heterophoria as 'latent squint.' Both applications of these terms are, I think, objectionable; they are misleading or pedantic. Why should a grandiose Greek name be given to such a common affection as ordinary squint? And it is misleading to think of young children having heterophoria, because actual squint has not yet become pronounced." The reviewer believes few students of muscular anomalies will agree with his statement (p. 171) that "true squint is intimately connected with errors of refraction; heterophoria and heterotropia are independent of these anomalies"—a statement that seems utterly contradictory to the meaning of the sentence (p. 22), "unless the fusion faculty be properly developed, be the refraction what it may, there can be no proper binocular vision." Much emphasis is laid, as it should be, on the presence and development of the fusion faculty as a most important factor in the etiology of squint. No doubt squint is purely, in the great majority of cases, an innervational defect and has no direct relation to the muscles themselves, and depends upon, first, the power of fusion, and secondly, on the state of refraction.

In the treatment of internal squint the author believes that orthoptic exercises are

of great value and postpones operation until other means have failed, thus conforming to modern practice. His description of the tests to determine the degree of squint and of the several amblyoscopes and exercises is lucid, easily understood, and readily followed. The method of developing the fusion faculty and improving vision in the amblyopic eye are not pursued with avidity by many oculists because of their tediousness and consumption of time and doubtful utility, but if they were more generally adopted others might become as enthusiastic as the author.

Mr. Hughes gives deserved credit to Donders, Javal, and Parinaud for their progressive writings and teaching. Landolt, another Frenchman, who is perhaps as well known on this side of the Atlantic for his work on the ocular muscles, is ignored. His advocacy of advancement as a substitute operation for tenotomy, a procedure which is becoming generally adopted, has received no mention. Worth's operation for advancement the author considers the most dependable. The reviewer prefers the method of Wootten to all others. One paragraph only is devoted to the treatment of divergent squint. To be sure it contains the gist of the matter, but one-half page seems little space in comparison to the many pages given to the treatment of convergent squint. The section on paralytic affections is comprehensive, terse, and contains a résumé of our knowledge of the subject, but as the author states in the preface, "It is quite impossible to add a great deal to the excellent work that has already been done, but I have endeavored in these pages to bring into line and compare some of the best practical teaching of the English and foreign schools." H. F. H.

PROGRESSIVE MEDICINE. A Quarterly Digest of Advances, Discoveries, and Improvements in the Medical and Surgical Sciences. Edited by H. A. Hare, M.D., Assisted by H. R. M. Landis, M.D. Volume IV, December, 1907.

The present volume of Progressive Medicine contains, as have previous issues for the quarter ending with the month of December, articles upon diseases of the digestive tract and allied organs, the liver and pancreas, diseases of the kidneys, surgery of the extremities, fractures, dislocations, tumors, surgery of joints, shock, anesthesia, and infections, genito-urinary diseases, and a "practical therapeutic referendum." The opening article, by Dr. J. Dutton Steele, like the previous ones which he has contributed, deals with many points of practical interest to the general practitioner, for whom it is carefully prepared. After discussing the normal physiology of digestion as revealed to us by recent researches, he takes up the morbid physiology of the digestive tract and considers the effect of the digestive ferments and movements of the stomach and intestines. In the section devoted to the subject of the action of alcohol in the stomach he quotes Kast as having made a series of experiments upon the human stomach through a gastric fistula. This observer found that alcohol stimulates secretion in the stomach to a greater extent than does water or common food substances, and he maintains that the occasional use of alcohol under 10-per-cent strength does no harm; whereas if it is of the strength of 20 per cent it is distinctly injurious to the empty stomach. In other words, the subject of the action of alcohol resolves itself into a question of the percentage of alcohol contained. The presence of such substances as sugar, acids, carbonic acid, etc., in the beverage, may modify the primary effect of the alcohol considerably. For example, red wine, owing to its tannic acid, diminishes markedly the secretion of mucus. An interesting chapter is that which deals with the morbid physiology of visceral pain, and another with the subject of gastric ulcer and the morbid physiology of gastroenterostomy. In the section devoted to diseases of the intestine an interesting discussion of chronic autointoxication of intestinal origin is found.

The article of Dr. Bloodgood upon surgery of the extremities, etc., is a very exhaustive one, and contains much that is of extreme value to surgeons who are actively engaged in the practice of their profession, as is also that of Dr. Belfield upon genito-urinary diseases.

The closing article in the volume, of

about 65 pages, by Dr. Landis, deals with all of the newer therapeutic points of the last year in an entertaining and practical manner.

A Clinical Treatise on the Symptomatology and Diagnosis of the Disorders of Respiration and Circulation. By Edmund von Neusser, M.D. Authorized Translation by Andrew MacFarlane, M.D. Part I, Dyspnea and Cyanosis. E. B. Treat & Company, New York, 1907.

The American translator of this useful little book, which is Part I of a series dealing with similar subjects, points out that since the discovery by Koch of the tubercle bacillus in 1881, and the application of solid culture media for the differentiation of bacteria, physicians have come to rely largely upon laboratory investigation and less than they should upon clinical observation, whereas as a matter of fact it is the duty of the physician to use both methods chiefly in obscure cases. The book opens with a chapter upon conditions which induce dyspnea, which covers seven pages, followed by a second chapter upon dyspnea and cyanosis in diseases of the respiratory tract. Following this is a discussion of the circulatory disorders which produce these two symptoms, whether the circulatory disorders depend upon congenital defects or upon acquired cardiac lesions. Further chapters deal with the effect of vascular lesions upon these symptoms, and others upon the effect of neuroses of the heart and disorders of the intestinal tract. The presence of dyspnea and cyanosis in various infectious diseases is then considered. It is interesting to note in this connection that pleural exudates, tuberculosis, pneumonia, and pertussis are classed amongst the diseases of the respiratory tract, although a chapter in the latter portion of the book deals with other infectious diseases like syphilis, typhoid fever, plague, diphtheria, cholera, and anthrax. Surely this is a curious pathological and etiological differentiation. The closing chapters deal with dyspnea and cyanosis due to various poisons. To this important subject nearly twenty pages are allotted. Finally we have a discussion of dyspnea and cyanosis in relation to renal disease, diabetes, uremia, hysteria, etc. The last chapter in the book deals with the therapy of dyspnea. This is very short and is the least satisfactory chapter in the volume, but as a practical book for the active physician it is well worthy of careful study and is very interestingly written.

Diseases of the Nervous System. Edited by Archibald Church, M.D. Authorized Translation by Julius L. Salinger, M.D. D. Appleton & Company, New York, 1908.

This octavo volume of over 1200 pages is composed of a series of articles contributed by between twenty and thirty well-known German neurologists in Berlin, Vienna, Würzburg, Breslau, Frankfort, Erlangen, Bonn, and Heidelberg. Such well-known names as Edinger, Eichhorst, Wernicke, and Gutzmann are amongst the list of contributors. In other words, it is a book on "Nervous Diseases" of about the same size as most of the standard works upon this subject written by a number of authors instead of by one neurologist. The book suffers from the difficulties which assail all "Systems" in that there is an inequality in the different articles. The illustrations are, many of them, not as well executed as the text deserves, but aside from these criticisms the book is in many respects one of the best works in the English language dealing with this subject. Much more space seems to be devoted to treatment than is found in many works upon neurology, and great care is taken to amplify the descriptions of the symptoms of the various diseases so as to make a diagnosis fairly easy to the general practitioner. Dr. Church, the American editor, at first expected to make numerous additions to the text, but after carefully studying the opinions of the original contributors came to the conclusion that the character of the book was such that it had best stand by itself with but few additions. In addition to the description of the various diseases, their diagnosis and treatment, there are separate chapters in some instances dealing with therapeutic measures of great importance, as, for example, the article upon Lumbar Puncture by Quincke, of Kiel, to whom we owe so much in the way of introducing and popularizing this valuable method of diagnosis and treatment.

THE PANCREAS: ITS SURGERY AND PATHOLOGY. By A. W. Mayo Robson, D.Sc. (Leeds), F.R.C.S. (Eng.), and P. J. Cammidge, M.B. (Lond.), D.P.H. (Camb.). Illustrated. W. B. Saunders Company, Philadelphia and London, 1907.

Of the five hundred and twenty-seven pages of this book, more than one hundred are devoted to a review of the anatomy, comparative anatomy, and embryology of the pancreas; and still another hundred to its histology and pathology, including a full consideration of the two conditions that, from the pathological standpoint, are of the most vital importance—fat necrosis and diabetes.

This is as it should be. The surgery of the pancreas is still undergoing active evolution, and in many respects is far from having assumed its final form. During this period—through which the surgery of every organ must pass—each case presents problems that can be solved only with the aid of thorough knowledge of the fundamentals and constant reference to them. The first portions of the book contain the best existing summary of the enormous mass of literature referring to the pancreas that has accumulated in the last two decades. The extent of this is indicated by the fact that almost eight hundred authors are referred to, most of them more than once, and some of them (Langerhans, Opie, Wirsung) having from fifty to ninety separate references. The results of their labors are here summarized and are presented concisely and comprehensively.

The section on general symptomatology represents the latest and, in the opinion of the reviewer, the soundest existing views on the subject. The classification of symptoms is practical. Under physical signs it is noted that swelling is usually present and, contrary to preconception, perceptible in cases of chronic inflammation (from tumefaction of the gland), in subacute cases (from suppuration), and in acute cases (from the enlargement of the pancreas, neighboring hemorrhagic effusions, and matted omentum). On the other hand—and also contrary to the views of many practitioners—in cancer of the head of the pancreas the tumor ordinarily felt is the enlarged gall-bladder. Fever is so variable as to be of no diagnostic value, though in a given case its character may be of value in determining the presence or absence of suppuration, of cholangitis, of hepatic abscess, etc.

Pain, except in acute pancreatitis, is also of little value; then it is agonizing and referred to the epigastrium, while in that region and likewise at a point just above and to the right of the umbilicus there is often excessive tenderness. The remark that pain under the left scapula, or between the scapulæ, serves to distinguish pancreatic pain from the right scapular pain of gall-bladder disease should have been coupled with a caution as to the unreliability of both these forms of pain as diagnostic symptoms, and hence their lack of value in differential diagnosis.

The pressure symptoms are well described and are easily understood—indeed, might almost be predicted—if the anatomical relations of the pancreas have been carefully studied.

The hemorrhagic tendency seen in most cases of pancreatic disease is believed to be due not solely to the jaundice but to changes induced in the blood by the pancreatic lesion. This is probably true, but when it is said to be "shown by the fact that patients with equally profound jaundice but in whom there is no disease of the pancreas do not bleed to anything like the same extent," the argument seems defective. Many patients with jaundice and without pancreatic trouble have bled to death from a "hemorrhagic tendency," undistinguishable from that associated with inflammation or cancer of the pancreas. The confidence of the authors in the power of calcium chloride to prevent such hemorrhage is, of course, not altogether unfounded, but it seems hardly justifiable to say without qualification: "The tendency to hemorrhage, both at operation and after, can be successfully counteracted by the administration of calcium chloride, in 30-grain doses, thrice daily, for from twenty-four to forty-eight hours before operation, and by enema, in 30-grain doses, twice daily for forty-eight hours afterward."

Deep jaundice with a distended gall-

bladder is properly referred in many instances to malignant disease of the head of the pancreas. Emaciation, if rapid and marked, is universally recognized as a significant symptom. It seems medieval, however, to write of a patient having lost "two stones five pounds!" To say nothing of the confusion of ideas, "thirty-three pounds" would be one word less, and would be intelligible to American as well as to English readers.

The digestive symptoms — dyspepsia, nausea, vomiting, etc.—are made to include also the extremely important matter of the condition of the feces, perhaps the most characteristic sign of pancreatic disease. The description of the bulky, soft, pale, greasy motions is accompanied by a full account of the steatorrhea which they indicate, and also of the rarer azotorrhea, in which undigested muscle fibers are found in the stools.

The doubtful symptom of sialorrhea is mentioned.

The metabolic symptoms are, of course, chiefly diabetes and glycosuria, to which an entire chapter has been devoted, but the value of the recognition of the fat-splitting ferment in the urine, of indicanuria, oxaluria, lipuria, etc., is also discussed.

The so-called "pancreatic reaction" (Cammidge's) in the urine is said to have been so improved by the authors that "a positive reaction may be expected in all cases where there are active inflammatory changes in the pancreas. Acute pancreatitis can thus be distinguished from intestinal obstruction, and other conditions with which it is liable to be confused, and chronic pancreatitis, associated with obstruction of the common duct by gall-stones, or secondary to duodenal catarrh, can be differentiated from simple cholelithiasis and jaundice, etc., for which a distinct method of treatment may be required." They add: "In our experience a characteristic pancreatic reaction in the urine has always been associated with evidence of disease of the pancreas at operation, or post-mortem, in all cases in which it has been possible to investigate the condition of the gland, and information kindly supplied to one of us by others regarding cases examined for them confirms our opinion of the clinical value of the test."

This is saying much, and there scarcely seems need to remark, as they do in the preface: "We do not consider that at present we are in a position to make more positive statements." They say there also, however, that in their own practice they never rely upon the "pancreatic" reaction alone in making a diagnosis of pancreatitis or malignant disease of the pancreas, but always take into account the results of a complete analysis of the urine and a chemical examination of the feces, as well as the clinical symptoms. The fact that other observers have failed to corroborate their experiences with this test makes the profession cautious as to its acceptance, but there can be no reason for not trying it fairly in every doubtful case, keeping in mind the distinct statement of the authors that the notion that they claim it to be pathognomonic is a mistaken one.

Alimentary glycosuria, test-meals, Sahli's test, are described, the general symptomatology reviewed, and the very just remark made that "with such a number of signs and symptoms as those above enumerated it is difficult to understand how the idea has gained so firm a hold that disease of the pancreas is, as a rule, unrecognizable during life. Although, in any particular case, one may not meet with all of them, there is usually such a combination that with care no difficulty need be experienced in arriving at a satisfactory conclusion."

The injuries of the pancreas, the different varieties of pancreatitis, the cysts and neoplasms of the organ, are all admirably described; many interesting cases are given; operative procedures are detailed; and results (in both their own and in others' practice) are tabulated.

The number of cases of partial pancreatectomy for growths and tubercle is rapidly increasing, and has indeed outstripped even the industry of the authors, whose reports in this direction are less complete than in the pancreatic operations. Up to this time the operation has been done four times for

epithelioma, once for sarcoma, and eighteen times for benign tumors (Mauclaire: *Archives Générales de Chir.*, 1907).

It will doubtless surprise many general practitioners inclined to take the old hopeless view of affections of the pancreas to read that of one hundred and two operations undertaken in patients in whom chronic pancreatic trouble constituted the chief disease, or in whom it formed a serious complication of other diseases, 96.1 per cent of cases were followed by recovery, giving a mortality of 3.9 per cent, and that since compiling the foregoing figures, in 1904, the authors' experience has very largely increased, and the mortality has diminished to a little over 2 per cent. Of course, similar percentages of cure do not follow in the acute or the suppurative cases, and not much is to be expected in malignant ones; but there can be no doubt that prompt operative interference in all suspected cases with direct incision and drainage, when indicated, or gall-bladder drainage in the majority of the subacute and chronic cases, will result in the recovery of a considerable proportion. The teachings of the book in these respects are sound, though perhaps somewhat too conservative. On the whole it can be most cordially recommended to both the practitioner of medicine and the surgeon, as a helpful and reliable guide in the many obscure conditions of the upper abdomen in which the pancreas is, or is suspected to be, involved.

THE TREATMENT OF FRACTURES. With Notes upon a Few Common Dislocations. By Charles Locke Scudder, M.D. Sixth Edition, Thoroughly Revised and Enlarged. Illustrated. W. B. Saunders Company, Philadelphia and London, 1907.

The sixth edition of Scudder's work, which has now become the recognized textbook on this subject, will be hailed with delight by surgeons, who, occupied in many directions, have been unable to keep abreast of the progress made in this branch of surgery, and who would be guided in their treatment by the authoritative statements of one thoroughly familiar with modern literature and widely experienced in practical treatment.

The first chapter is devoted to fractures of the skull, and from the standpoint of the hospital interne covers the subject well. Fractures of the bones of the face follow in order. An ingenious splint is depicted for remedying deformities incident to fracture of the nasal bone. The use of fixation pins is not mentioned. In fracture of the lower jaw the interdental splint receives careful description and just recognition.

In discussing the question of operation for fracture of the vertebræ Scudder states that in partial lesions operation may be demanded; in fracture of the laminæ and spines operation is demanded; in all lesions of the cauda equina operation is demanded; in almost all complete lesions operation may be done with the hope of doing some little good.

Condylar and supracondylar humeral fractures are treated in the acutely flexed position, the arm being inspected daily for the first week. To Colles's fracture is accorded the careful consideration to which the frequency of this injury entitles it. In discussing fracture of the hip Scudder gives a number of methods, among them that of Whitman, by abduction, but fails to mention the admirable results achieved by Ruth as the result of combined longitudinal and lateral traction. Nor is space given to fractures of the astragalus and os calcis, which the comparative frequency of these injuries and their crippling effects would seem to justify.

There is a brief but very excellent summary of the anatomical facts concerning the epiphyses, beautifully illustrated. The summarizing of the Roentgen ray in its relation to fracture is admirable. The chapter devoted to plaster of Paris is likely to be serviceable even to those experienced in the use of this medium. The ambulatory treatment of fractures of the lower extremity is briefly considered. The book closes with some notes upon a few dislocations.

It is obvious that Scudder has not been carried away by the fashion of the moment which dictates the open method of treating all fractures which cannot be perfectly reduced; holding, and in this representing the most experienced men of the profession, that the vast majority of fractures can be

treated successfully by less dangerous methods. None the less he has given to surgical intervention due credit and has indicated clearly its indications and limitations.

He has written a book which is a safe guide to the student, is indispensable to the general practitioner, and is useful even to the surgeon with a general hospital service.

THE OPERATING ROOM AND THE PATIENT. By Russell S. Fowler, M.D. Second Edition, Revised and Enlarged. Philadelphia and London: W. B. Saunders Company, 1907.

This second edition of "The Operating Room and the Patient" covers a larger field than would be suggested by the title, since there are to be found among the chapter headings "The Instrument and Supply Room," "Anesthesia," "General Considerations," "Course of Aseptic Wounds," and "Lists of Instruments and Dressings Commonly Employed."

The book is written in a dogmatic style, as expressing the settled convictions of the writer. It is quite certain that some of the views thus expressed are not capable of general application, nor are they commonly accepted as sound.

Thus, the author advises that chloroform and ether should be poured into blue glass bottles and a reserve supply should be kept in original packages. It is happily now almost the universal custom to order ether in quarter-pound cans and to administer it directly from these packages by the drop method. The inhaler depicted by the author, or modifications of it, have been generally abandoned.

Ethyl bromide is so little used because of its danger that it seems unwise to give it the serious consideration which it receives in this work. For the same reason it seems unwise to devote nearly as much space to spinal analgesia as is considered adequate for etherization.

The futile addition of morphine to a cocaine mixture advised for local infiltration is still countenanced.

It seems a gratuitous magnification of discomfort to subject a patient entering the hospital to a scrubbing with soap-suds and a soft brush of the head, axillæ, genitals, anal region, hands and feet, and cutting short his finger-nails and toe-nails and cleaning his subungual spaces, when perchance the intervention required is simply the removal of a birthmark.

It is a relief to find that the author specifically states that the eyebrows should not be shaved, though he holds that in operations involving the mouth or nose the beard and mustache should be removed.

Excellent illustrations are given of the position of the patient which most facilitates the work of the operator, though the extension of the arms above the head as figured in the cuts is to be avoided when this is practicable.

Under the title "General Considerations for Treatment" there is given an interesting section on the appearance of the patient, Fowler stating that to the experienced eye this is of great value. He holds that when the "facial expression is content and the patient welcomes the surgeon with a smile" the case need occasion no anxiety, and notes that in distention the countenance may be somewhat troubled, whilst "in the early stages of anuria there is a peculiar glitter of the eye and a suffusion of the face which to him of clinical experience is most significant."

The author particularly cautions against the use of morphine, even though there be pain, if the drug can possibly be avoided, especially dreading it in laparotomy cases.

As representing the practices and beliefs of a single hospital this book is of extreme interest to every operative surgeon, nor can one read it without thoroughly agreeing with the major part of its teaching.

A TEXT-BOOK OF PRACTICAL GYNECOLOGY FOR PRACTITIONERS AND STUDENTS. By D. Tod Gilliam, M.D. Second, Revised Edition. Illustrated. F. A. Davis Co., Philadelphia, 1907.

The second edition of this work exhibits no cardinal departure from the scheme of the original book. It has been carefully revised, sets forth with great clearness modern modifications in technique, and has appended an index of regional symptoms which is distinctly valuable and which could with advantage be made much more comprehensible. The book ends with a small

section on Diseases of the Rectum that cannot be considered either comprehensive or modern.

The section devoted to Diseases of the Urethra and Bladder is much more satisfactory.

The major portion of the book, devoted to practical gynecology, is a clear and concise exposition of the current practices in this branch of surgery.

SURGICAL APPLIED ANATOMY. By Sir Frederick Treves. Fifth Edition. Revised by Arthur Keith, M.D., F.R.C.S. Illustrated. Lea Bros. & Co., Philadelphia, 1907.

This book, originally published in 1883, became almost immediately the most popular and useful work on this subject in the English language. Since then it has passed through several editions, of which the fifth, revised and modernized by Arthur Keith, is now under review.

In the first chapter, devoted to the scalp, Keith has inserted an excellent summary on trephining for meningeal hemorrhage, cerebral abscess, and cerebral tumor. It is interesting to note that in spite of the enormous literature on the subject the teaching in regard to the mechanism of fracture remains unchanged from that of the first edition, nor does even a small paragraph upon craniectomy seem desirable in view of the practically universal abandonment of this seemingly futile procedure.

In the chapter devoted to the cranial bones there is a just appreciation of the importance of the subarachnoid space. In considering the surface relations of the brain the text of former editions of the work is materially changed, the method of localization being extremely simple, though perhaps not that generally practiced by operating surgeons.

Throughout the work there is found the evidence of a conservative, learned, and conscientious revision, one which, while not fundamentally altering the book, makes it serviceable both to the student and the practitioner.

CORRESPONDENCE.

LONDON LETTER.

BY G. F. STILL, M.A., M.D.

The whole scholastic portion of the medical world in London—that is to say, the staffs of all our great hospitals and medical schools—has been absorbed in one topic of burning interest during the past month, namely, the election of a representative of the medical faculty on the Senate of the University of London. In the usual order of things such an event would have stirred up only the most languid interest, but on this occasion it was understood that a great principle was at stake, which I must explain in brief. During the past two or three years there has been an effort to concentrate the teaching of the preliminary subjects of the medical curriculum at certain centers so as to leave the hospitals free to expend their energies on clinical teaching. At first all went well; it seemed as if all would agree; King's College and University College were to be two of the centers, and a third was to be built at South Kensington, for which funds were collected and a site promised—a matter of several thousands of pounds. After going thus far petty jealousies arose; several of the hospitals drew back, and changing their policy refused to give up the teaching of the early subjects. But by this time some hospitals had already taken the step and ceased to teach these subjects, notably St. George's Hospital, which relied upon the third center at Kensington for its students in the future, consenting in the meantime to allow them to go to King's College or University College for these early studies. The Senate of the University of London, after collecting funds and securing the site, finds that there is now no need for a third center, and proposes either to restore funds and site to those who had given them, or to

build an institution to be used for research work.

Now comes the tug of war. St. George's Hospital declares that it gave up the earlier part of the curriculum on the definite understanding that a third center should be built; the principal of the University of London, Sir Arthur Rücker, repudiates any such promise. Three candidates appear in the field to contest the election, which would give them a voice in the Senate: Professor Starling, the well-known physiologist, upholding the original idea of having a third center; Dr. Norman Moore, of St. Bartholomew's Hospital, supporting the proposal that the funds and site should be used to build an institute for research; and Mr. F. C. Wallis, of Charing Cross Hospital, upholding the same view, but contending that there is no sufficient surgical representation on the Senate, and therefore putting himself forward as a candidate. The electors have been inundated with circulars and addresses and counter-manifestoes by the rival candidates for several weeks. The possibility of a third center seemed to be hanging in the balance, and St. George's Hospital pressed its grievance, whilst others talked of the research institute as a "diversion of funds." At last the day of decision came: at the first ballot Professor Starling headed the poll, but he had less than half the total number of votes, so a second ballot was taken between him and the nearest candidate, Dr. Norman Moore. The result was an easy victory for Professor Starling. It now transpires that the site has already been restored to the donor, and the money offered back to those who gave. The whole proceeding reminds one of Lewis Carroll's "Hunting of the Snark," when after a lengthy trial the pig had been sentenced to transportation for life, "the jailer informed them with tears such a sentence would have not the slightest effect, as the pig had been dead for some years."

At a recent meeting of the Medical Society, which is one of the very few societies remaining unabsorbed by the Royal Society of Medicine, some cases of unusual interest were shown. Dr. Poynton exhibited a boy of four years with the genital development of an adult, and with a big adult voice which sounded extremely ludicrous coming from a young child. The child was big for his age, but not extremely obese, as some of these cases of precocious development become. It is well known now that this condition is associated with disease in the suprarenals, but no tumor could be felt in this boy. Dr. Savill showed a boy of sixteen years who had developed symptoms of locomotor ataxia since the age of fourteen years; his father had syphilis, but the boy showed no other evidence of syphilis. Very few instances have been recorded of locomotor ataxia at so early an age. A case was also shown of the so-called cleidocranial dysostosis—a boy of six years with a very large open fontanel and absence of the outer part of both clavicles.

The Royal Society of Medicine celebrated its own birth by a great dinner at the Hotel Cecil on December 3, when Sir William Church, the famous President of the Royal College of Physicians, who was one of the prime movers in the formation of this amalgamated society, took the chair. Considerable doubts were entertained in some quarters at first as to the financial possibility of the scheme, but so great has been the rush of candidates for the fellowship of the society, which entails the largest subscription, that it has been necessary to simplify the entrance so that a great part of the meetings may not be occupied in the election and admission of new fellows.

The undergraduates of Oxford and Cambridge have a traditional reputation for rowdyism upon occasions, but the London medical student can also distinguish himself in this way when opportunity offers. Recently a band of medical students proceeded to Battersea, a part of London which has made itself notorious as the abode of socialism, radicalism, and fanaticism of various kinds, and attempted to demolish what is known as "Battersea's brown dog." A short time ago the Borough Council of Battersea positively sanctioned the erection of a monumental tablet to the memory of a brown dog, which the monument states was

"done to death in the laboratories of University College," and the mayor of Battersea degraded his office by unveiling this scandalous erection. These modern representatives of Bob Sawyer, being indignant at the insult to medical science, took the law into their own hands and attempted to ruin the monument with a hammer; but their intentions were frustrated by the police, who arrested several of them, with the result that they were heavily fined and threatened with imprisonment if such an attempt were made again. Probably every true scientist will sympathize with the indignant disgust of these youths at the contemptible action of the Battersea mayor and council in allowing the antivivisectionists to erect such a monument, but the dignity of our profession is not enhanced by such youthful folly. To-day some hundreds of students marched through some of the main thoroughfares to the Strand, where they burned an effigy of the magistrate who had threatened their fellow-students with imprisonment.

It is announced that Mr. Andrew Clark, or rather Dr. Andrew Clark, for on the occasion of the meeting of the British Medical Association at Oxford three years ago he received the honorary degree of Doctor of Science, is about to retire from the post of surgeon to the Middlesex Hospital, where he has also been for some years lecturer on surgery. He has been connected with this hospital nearly forty years.

The "trypsin treatment" of cancer has recently been again discredited. Seven cases of inoperable cancer were treated in London by this method, four at St. Mark's Hospital, three at Charing Cross Hospital; it is stated that not one of the cases showed the least benefit from the treatment.

The greatest satisfaction has been given both to the medical profession and to Cambridge University by the recent honor bestowed by the king upon Prof. Clifford Allbutt, who on the king's birthday was made a Knight Commander of the Bath. Sir Thomas Clifford Allbutt, whose fame is known throughout the civilized world by the monumental work on medicine which bears his name, is respected by all who know him personally. As Regius Professor of Physic in the University of Cambridge he has upheld the dignity of that office, and advanced medical teaching and research at Cambridge to no small degree; he proved indeed a worthy successor of Sir George Paget and those who preceded him in that distinguished position. The only London physician who was singled out for the honor of knighthood was Dr. W. H. Allchin, who is consulting physician to Westminster Hospital, and who has labored earnestly in the reorganizing of the University of London. He is, moreover, one of the Medical Consultative Board of the Admiralty. His Manual of Medicine has had a wide circulation, and he is a recognized authority on diseases of the digestive organs.

Sir Frederic Treves, who has been the recipient of much royal favor, has recently received from His Majesty a house in Richmond Park; it is very rare for the crown to bestow one of these residences upon a member of the medical profession.

The death of Lady Brampton, whose husband, Lord Brampton, was better known as Mr. Justice Hawkins, has brought a large legacy to the chief Roman Catholic Hospital of London, the Hospital of St. John and St. Elizabeth, which formerly stood in Great Ormond Street adjoining the famous Children's Hospital. A few years ago this Catholic hospital was quite a small institution; it has lately removed from central London to the suburbs, and with this legacy of £100,000 will no doubt become a large and imposing building.

The libel action, or rather the appeal against the former decision, in the case of a Dr. Dakhyl against the editor of *Truth* has lately excited public interest. *Truth* had described Dr. Dakhyl, who was connected with a certain Drouet Institute for the Treatment of Deafness, as a "quack." Dr. Dakhyl in an action for libel was awarded £1000 damages. *Truth* then appealed, and on this appeal the jury has just now reversed the decision in the former trial. It is evident from many of the lay journals and newspapers that the public as well as the medical profession in this country are

beginning to have some idea of the mischief done by quackery; but error dies hard, and patent medicines and humbug will continue to flourish in spite of any number of legal pronouncements.

PARIS LETTER.

BY R. H. TURNER, M.D. (PARIS).

In my last letter mention was made of a millionaire, named Soller, who had offered to give one million francs to the Assistance Publique, the great medical charity organization of Paris, if this were used to control the acts of the medical staff in the Paris hospitals. The Assistance Publique did not at first refuse the offer, but asked under what conditions this sum would be paid over, and finally required of him that he should make a donation. Soller has so far not shown any inclination to do so. On the other hand an inquiry was made into Soller's financial past, and it was found, according to the *Matin,* that he had been more or less of a peripatetic, wandering from one quarter of the city to the other, and forgetting, alas, to settle with his landlord before leaving! Moreover, he had been a company promoter, and the shares of the various companies he started finished by selling at five or ten centimes apiece. Still the daughter of Soller inherited a certain sum from her mother, a matter of 400,000 francs, so that when all accounts are squared it would seem that the family owns about 300,000 francs, hardly sufficient to allow them to give a million.

The bubonic plague has broken out in Oran and at Tunis, and dispatches show that there is a lack of serum. Interviewed on this subject by a reporter of the *Matin,* Dr. Dujardin-Beaumetz, who is charged with the preparation of this serum at the Pasteur Institute, replied that there were enormous quantities at Garches, a small place near Paris, where the horses used for making the serum are kept. This serum was used at Oporto in 1899 by Drs. Calmette and Salinebeni, and out of 142 patients treated only 21 died, a mortality of 14.78 per cent, whereas 72 patients that were not treated showed a mortality of 63.72 per cent. Dr. Dujardin-Beaumetz stated that Yersin had obtained at Canton 24 cures out of 25 cases. At Nha-Tvang the mortality of his patients was only 42 per cent, whereas 39 others which were not treated all died. Indians do not seem to recover so readily, on account of their extreme susceptibility to bubonic plague.

There has been some disturbance at the Faculty of Medicine over the nomination of two new professors, Dr. Parent and Dr. Nicholas, who are respectively appointed to the chairs of histology and anatomy. Professor Debove, who is the dean of the Faculty, and who is not much favored by the students, has tried to find two men who would undertake this work and devote themselves exclusively to it, not having any practice outside to interfere with their professorship. He was obliged to ask two men from Lille and Nancy; as none of those in Paris would submit to these conditions. At the beginning of November, when these professors were about to give their inauguration addresses, the students made such an uproar that it was impossible for them to continue, and some of the medical students even went so far as to make a bonfire of the benches in the court of the school of medicine. The police were called in and the "manifestants," as they are called, were dispersed. As a punitive measure the dean decided to close the Faculty until the 1st of January, a few students, however, being allowed to pass their examinations, as in some instances they would be obliged to join the army in case they did not have their diplomas in time.

A subject of some importance from a hygienic point of view is that of the breeding of oysters near the outflow of sewage of certain towns in France, and there has been a good deal written on this matter during the last few months. It has at last been decided to prohibit the sale of oysters from certain beds where oysters have been grown, and then put elsewhere for several weeks, to remove all taint. There is no doubt that oysters play a certain rôle in infection, and in the writer's practice there

has been during the last two years one case of typhoid fever and one of acute catarrh of the bowels due almost surely to oysters eaten in a well-known restaurant. The new regulations will certainly help to prevent such unfortunate events.

It is a peculiar thing how much less typhoid fever is seen in Paris than in former days. I remember the number of cases I used to see in the hospitals, some of them most virulent, and now the mortality per week from typhoid fever is about seven—*i.e.*, 365 deaths a year for a population of close on three millions. There was a time, for instance in 1855, when there were 200 deaths a year per 100,000 inhabitants.

The ointment recommended by Metchnikoff as a preventive of syphilis is to be placed at the disposal of the soldiers in the French army. Immediately after the soldiers have joined their respective regiments, lectures will be made them by their officers as to the dangers of venereal diseases, and they will be instructed as to the means of avoiding infection by using a solution of permanganate of potassium and a calomel ointment. In every infirmary an ointment composed of one part of calomel for two parts of vaselin will be placed at their disposal, and they will be shown how to use it. This will always be preceded by an injection and wash of a 1-in-5000 solution of permanganate of potash. Statistics will be established to show the efficacy of these precautions.

Professor Debove's term as dean of the Faculty expired on the 21st of November, and he refused to continue. A meeting of the professors of the Faculty took place on that date, and Professor Landouzy was elected by 57 votes out of 63. Professor Landouzy, who is the son of a well-known physician of Reims, has been successively professor of therapeutics, of internal medicine, and lastly of clinical medicine. He is much appreciated by his colleagues, and is known for the interest he has taken in the treatment and prevention of tuberculosis.

At a recent meeting of the Society of Surgery, held on the 15th of November, the use of electrargol or collargol in meningitis was discussed. Dr. Paul-Laurens presented a case of a patient suffering from acute septic meningitis due to ear trouble, caused by the enterococcus. On cleaning off the cephalorachidian liquid deformed polynuclears were found. Fifteen to twenty cubic centimeters of the liquid was drawn off daily, and five cubic centimeters injected. Dr. Widal has also published a case of cure of a serious form of cerebrospinal meningitis where five centigrammes of collargol was injected into the arachnoid space. Dr. de Massary also cited a case of meningitis in which there were no germs, but abundant polynuclears, the latter, however, being intact. In such cases, however, no injection should be made, as it would increase the reaction. Other cases were also cited by Drs. Mosny and Sacquégrée; and Dr. Lermoyez, the celebrated ear specialist, remarked that the subarachnoid injection is preferable to the intravenous on account of the rapidity with which it acts.

Professor Chantemesse has again drawn the attention of the medical public to the results he has obtained by using his typhoid fever serum, and in his report at the Berlin Congress of Hygiene he dwelt on the notable diminution of mortality he has obtained. During the last six years 5621 cases of typhoid fever have been treated in the Paris hospitals, and the mortality was 17 per cent. During the same number of years Dr. Chantemesse has treated at the Bastion 29 one thousand cases, and he has only lost forty-three, which makes a mortality of 4.3 per cent. The treatment was the same with the exception of the serum.

Two other physicians, Drs. Brunon and Josias, have also used this serum, and as a result Brunon has only had 3 deaths in 100 cases, and Josias 8 deaths in 200 cases. At the military hospital of the Val de Grace the mortality was 10 per cent until the serum treatment was tried, when it fell to a little over 5 per cent. Dr. Chantemesse insisted on the importance of making an early diagnosis, and for this he has found that there exists an ophthalmo-reaction parallel to that employed in tuberculosis.

Dr. Chantemesse indicates how the dry toxin should be prepared and employed, and gives the results he has obtained. Fifty persons convalescing from various diseases were experimented on; in but one case was there any reaction, and that only for a few hours. This was due to the patient, who was tuberculous, having probably had typhoid two years before. Seventy patients suffering from typhoid fever, diagnosed with the sero-diagnosis of Widal, also reacted to the ophthalmic test, and this reaction often preceded the first test. No ill effects are to be feared from this method of diagnoisis. After indicating his method for preparing the serum Dr. Chantemesse stated that the good effects of the serum were undoubtedly due to the hyperactivity of the lymphoid bodies (spleen, etc.), which is accompanied by an increase in the opsonic index. Moderation should be exercised in the dose of serum employed, as it would not be well to produce too great a destruction of the germs, as the consequent resorption of a large dose of toxins might be disadvantageous.

TREATMENT OF TUBERCULAR OSTEITIS OF THE TIBIA BY IODINE AND CREOSOTE.

To the Editors of the THERAPEUTIC GAZETTE.

SIRS: During the past few years I have pursued a particular method of treatment in tubercular osteitis of the tibia with such satisfactory results that I submit the brief notes of a recent case in illustration. It is understood that where there is a sequestrum its removal would be a necessary preliminary.

L. Q., a native of Cebu, was occupying a hammock in the house of a relative when I was called to see him, in November, 1906. He had been unable to do anything toward his support for more than a year, and was completely helpless and destitute, except for some rice which his wife brought to him for his daily food. His right leg from the knee down was much changed by emaciation of the soft parts and by edema of the foot and ankle. The knee and ankle were both stiff. The skin was glossy, where it was not covered with dermic scales and dried pus. There were five sinuses between the knee and the ankle, leading down to diseased bone. His general condition was very poor, he was weak and emaciated, and was absolutely dependent upon his relatives. He was admitted to the Post Hospital at Gandara, where I undertook the task of attempting to reëstablish his wage-earning abilities. Immediately after admission, the sinuses, which ran from every direction into the tibia, were freely opened and flooded with normal salt solution. No curetting was done, except with the finger during the irrigation. He was given internally ten drops of the compound tincture of iodine, well diluted with hot water, three times daily before meals, and he was put on the regular hospital fare for a station in the field. Locally an irrigation with Lugol's solution in normal salt solution (three per cent) was ordered to be given daily. This was followed by an injection into the sinuses of a mixture of creosote and cottonseed oil, and this was also applied on the dressings. The strength of the creosote mixture was at first one in two hundred, which was injected every day for a week, then the intervals were increased and also the strength, until he received an emulsion of one in sixty, given once a week. No splint or cast was applied; but he was encouraged to frequently move the affected joints. At the end of six weeks he left the hospital walking with a cane. He subsequently returned for dressings once a week for about a month, when he sent word that he was so busy planting rice and hemp that he could not very well come any more, and hoped I would excuse him. At the last reports he was still well and busy, and has had no more trouble with his leg, which I presume has entirely healed. Incidentally I might mention that one of the results of his stay in the hospital was that he gained while under treatment about thirty pounds in weight. When last seen he had no signs whatever of tuberculosis.

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Gandara Post Hospital, Samar, Philippine Islands, August, 1907.